

INSIDE THE WORLD'S FASTEST R/C CAR—85MPH!

Radio Control

15 47380

April 1993

# CAR ACTION

THE WORLD'S LEADING R/C CAR MAGAZINE

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**CHOOSING FUEL**

**NITRO BUYERS' GUIDE**

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# Radio Control CAR ACTION

## TRACK REPORTS

**36**  
**MRC THUNDER KING**  
*by Frank Masi*  
*World Scale wonder*

**44**  
**TRINITY EVOLUTION 10**  
*by John Howell*  
*Slay ride*

**60**  
**KYOSHO WILLIAMS RENAULT F1**  
*by Stan VanDuff*  
*Formula fury*

## DEPARTMENTS

**6**  
**EDITORIAL**  
*by Frank Masi*

**8**  
**LETTERS**

**10**  
**PIT TIPS**  
*by Jim Newman*

**16**  
**INSIDE SCOOP**  
*by Chris Chianelli*

**20**  
**READERS' RIDES**

**184**  
**WHAT'S NEW**

**186**  
**AD INDEX**

## COLUMNS

**12**  
**TROUBLESHOOTING**  
*by Frank Masi*

**24**  
**NITRO NEWS**  
*by Jeff Bronstein*



Kyosho Williams Renault F1, page 60

## RACER NEWS

**97**  
**RACER NEWS**

**100**  
**SPEED SHOP**

**ON THE COVER:**  
Trinity's Evolution 10;  
body by Protoform; custom  
paint by Bich'n Bodies.  
(Photo by Walter Sidas.)

**104**  
**PARMA/PSE SHOOTOUT**  
*by John Thawley*  
*Another King sighting*

**120**  
**MOTOR MAINTENANCE**  
*Brushes and magnets and  
springs, oh my!*

**125**  
**RC10L FRONT ENDS**  
*by John Howell*  
*Optimum options*

**129**  
**INSIDE THE INSANE RUN WINNER**  
*by Fred Höek*  
*Land-speed record!*

## FEATURES

**28**  
**HOME-BUILT PROJECT: '67 VETTE**  
*by John Howell*  
*Modified muscle-car*

## SPECIAL GAS SECTION

**67**  
**NITRO BUYERS' GUIDE**  
*Everything you need*

**80**  
**ENGINE MAINTENANCE**  
*by Jeff Bronstein*  
*Powerplant prep*

**89**  
**NOW TO NOSE FUEL**  
*by Jeff Bronstein*  
*Up with Jeff*

**147**  
**TRACK DIRECTORY**  
*Places for races*

# EDITORIAL

## A BRAVE NEW WORLD

I often wonder what the future of radio control holds.

Everyone knows that R/C cars basically evolved from slot-car racing, but my question is this: what's the next step?

I'm not talking about *waaay* in the future (you know, telepathically controlled hover-cars and the like); I mean five years from now. I look at some of the technology used in today's off-road racers and it's staggering. How can these things possibly go any faster? They will.

It's only logical. Electric motors are more powerful, and batteries have more capacity now than ever before. Even the cars handle better. Next year, there will be better motors and batteries and faster cars—just you wait and see!



Radio control is full of fresh ideas, so who's to say what's coming next? Take MRC's new World Scale line, for instance. If you had described it to me over the phone, I probably would have responded "No way. Nope. No way. Never fly. No way." But after seeing the Thunder King truck in action (and driving one myself), I think that it might become extremely popular.

I do have an appreciation for the task that MRC has undertaken. Just when you thought that the R/C-car industry was becoming somewhat stagnant, they've created an entirely new category—very brave indeed.

Although World Scale is aimed at newcomers, I foresee its racing applications as well. Tracks all around the country could add a World Scale class to their existing race programs. Who knows where it could go from there—World Scale Regional, National, and World Championships. I can see it now.

There are other things to consider. If World Scale takes off, think of all the after-market-parts business that will be created. Tires, rims, graphite chassis. Everything that's made for  $\frac{1}{10}$ -scale cars can be "up-sized" for the bigger World Scale car and trucks. Who knows, perhaps other companies will offer their own versions of these large, electric-powered cars.

Something totally different. I think it's a great idea.

*Frank R. Masi*

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# NEWS

## WORLD SCALE SUSPENSION: TRACK-TESTED FOR

### PERFORMANCE AND DURABILITY

Suspension is just as important to handling with R/C cars and trucks as it is with full-size—the better the suspension, the better the vehicle handles.

The suspension found on MRC's World Scale car and trucks is the result of years of intensive research—designed to be the best so you get the best-handling R/C vehicle. Take the Thunder King monster truck: its four-wheel-independent suspension uses tough, extra-long A-arms which are damped by large-volume oil-filled shocks with coil-over springs—the same kind of suspension system found on most full-size off-road racers! And with the Thunder King's mammoth 5¾-inch tires and greater mass (up to 50% more than 1/10-scale trucks), you can get away with stunts that would put other vehicles in the weeds.

### SUSPENSION SETTINGS

Sure, all this sounds great, but what about tunability? If you can't dial-in the truck to your particular running conditions, what good is it? As with all the World Scale vehicles, the Thunder King's fully-adjustable suspension is part of the package.

- Shock pistons.** Each shock comes with a selection of pistons. Use the two-hole piston on smooth surfaces where hard cornering is needed, or install the four-hole piston on super-bumpy tracks where soft damping will keep your Thunder King ahead of the competition.

- Spring tension.** Setting the Thunder King's spring tension is simply a matter of raising or lowering the spring collars of its shocks. By adjusting the spring's tension, you can set the ride height tall for clearing large obstacles, or low for quick cornering.

- Toe-in/out and camber.** Adjustable tie rods let you set the front toe-in/out as well as set front and rear camber. Toe adjustment changes the way the vehicle enters and exits turns, and affects its straight-line stability. Camber adjustment alters the amount of tire surface that contacts the road during suspension travel and cornering.

### A SIZABLE DIFFERENCE

The more you learn about suspension, the more you'll come to appreciate the difference between World Scale and smaller off-rovers. Watch the Thunder King's suspension in action and you'll see scale realism and performance like no other. Ruts, bumps and jumps are easily soaked up by the massive shocks, while the long arms make stable cornering a priority.

Performance wasn't the only goal World Scale designers had in mind, but there's no arguing that it was at the top of the list.

# LETTERS

**WRITE TO US!** We welcome your comments and suggestions. Letters should be addressed to "Letters," *Radio Control Car Action*, 251 Danbury Rd., Wilton, CT 06897. Letters may be edited for clarity and brevity, and each must include a full name and address or telephone number so that the identity of the sender can be verified. We regret that, owing to the tremendous numbers of letters we receive, we can't respond to every one.

### LETTER OF THE MONTH

Frank Masi's Editorial in the December issue of *Car Action* was an interesting one, and I was particularly amused by his Christmas wish for a Mazda RX7.

My yuletide desire is for a time-travel machine loaded down with goodies. I'd like it to be air-conditioned and capable of both ground and air travel, and have a radio/TV unit that receives stations from any era in history.

Of course, I don't think for even a minute that time travel is actually possible. To me, it involves the absurdity that an atom could collide with itself in either the past or future. I'm not a scientist, though, so I may be totally wrong. I'm a retired factory worker who dabbles in philosophy, and I'd like to visit philosophers from other eras. Ancient Greece, for example.

JIM TENNIS  
Romeoville, IL

*Well, Jim, you have some very interesting ideas, but I'm afraid we've found some flaws in your plan.*

*The largest problem is with the radio/TV unit. First, broadcast television signals have only been around for about 40 years, so that pretty much takes care of the Ancient Greece Socrates/Plato/Heraclitus triplecast. Second, we think that cable TV and pay-per-view will continue to encroach on the networks' market share, so you'll be seeing less and less broadcasted TV; the only way you'd be able to pick up signals in the future would be to mount a satellite dish atop your time machine, but that would present aerodynamic problems that we don't even want to think about!*

*I realize that you want to see the vastness of history in all its awesome splendor—the evolution of man, the birth of*

*civilization, the Greek and Roman Empires, the rises and falls of kingdoms, Napoleon, etc.—but just think what would happen if you actually started receiving TV signals for, say, "Punky Brewster," or worse, "The Ropers"? Not exactly the trip you had planned, is it, Jim??*

*Another problem is that you could travel back to the late '70s and, using your knowledge of today's R/C technology, cause a disruption in the time/space continuum, and make Gil Losi Jr. cease to exist. Then where would we be?* FM

### 4WD MANIA

I was out of the R/C hobby for about two years because of a personal budget recession, but I'm happy to say I'm back in it to stay!

I'm looking forward to buying an up-to-date 4WD 1/10-scale electric. I need your help! I've missed so much! The "4WD Shootout" in the December '88 issue helped me to pick out my awesome Turbo Optima Mid SE. I think it would be cool if you had another 4WD shootout or a 4WD special issue—all the top companies' cars, racing all-out. It would attract much more 4WD competition, and I'll be able to choose my next 4WD.

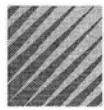
XAVIER VALDEZ  
Chicago, IL

*You're in luck, Xavier. In our next quarterly special, *R/C Dirt Action*, we'll have a 4WD shootout that includes all the newest, hottest cars. Tentatively scheduled to appear in our lineup are Kyosho's Lazer ZX-R, Schumacher's BossCat, Tamiya's Top Force Evolution, Tomy's Intruder EX and Yokomo's Works '93. It will be so trick you won't believe it. Stay tuned. JH*

### DOUBLE-TAKE

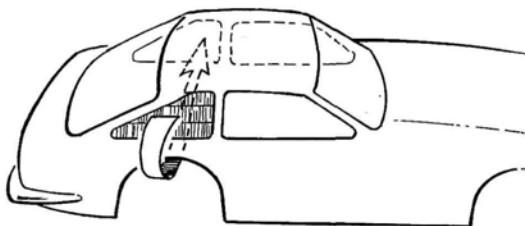
I read the November '92 issue of your rad mag and ran across Kunio's Gas RC10T and wondered how the heck he used an Airtronics servo for its throttle and a Futaba

*(Continued on page 132)*



# PIT TIPS

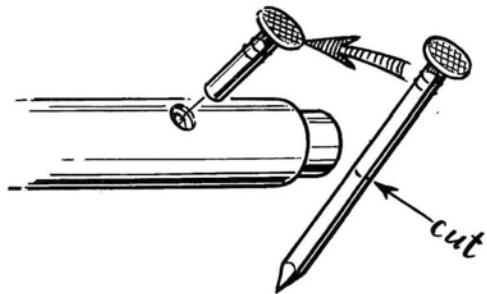
by JIM NEWMAN



## MASKING INSIDE WINDOWS

Masking a window inside a body can be very difficult to do. It's easier if you cut the masking tape to shape on the *outside* of the window, then carefully peel it off and apply it to the *inside* of the opposite window.

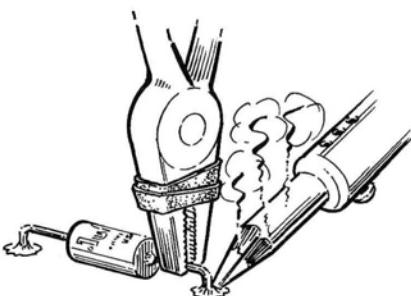
*Elliot Sasson, Silver Spring, MD*



## PIN PUNCHES

Pin punches are a must if you're tapping out roll pins, and you can make them out of nails. Just cut them to the length you need, then grind the ends flat before you use them. To avoid damaging your roll pin, use a pin punch of the correct size.

*Jeremy Howald, Chester, VT*



## SOLDERING HEAT SINK

When soldering delicate electronic components, hold the wire in small pliers to conduct the damaging heat away from your work. Use a rubber band to keep the pliers closed firmly on the wire.

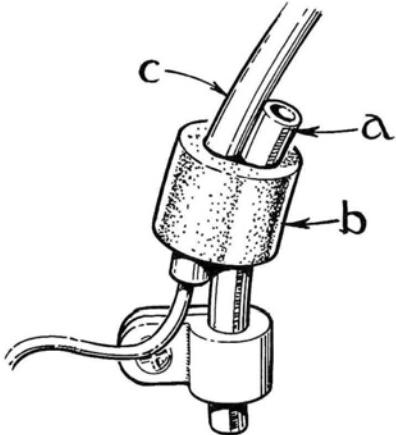
*Andre Williams, USN, Great Lakes, IL*



## AIRBRUSH CLEAN UP

Fill a syringe or an eye dropper with thinner, then squeeze the bulb hard to pump it through your airbrush parts and flush out the remaining paint.

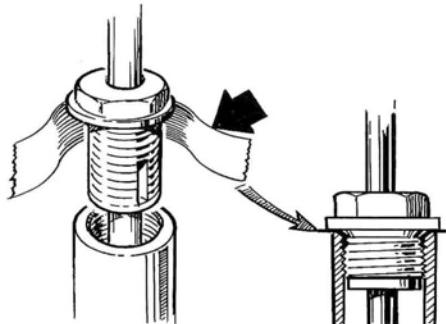
*Michael Schott, Black Jack, MO*



## QUICK-CHANGE ANTENNA MOUNT

Force a piece of nylon rod or tube (a) into the antenna mount, put a piece of rubber hose (b) over the short stub, then put the antenna tube (c) through the hose, too. If you have only one receiver, this setup will allow you to transfer it and the antenna from car to car without having to unscrew anything.

*F. Kezm, Kiawatha, IA*



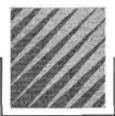
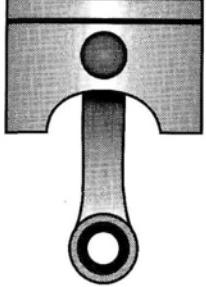
## SHOCK SEALER

Cartridge-type shock units, e.g., Losi Double Os, are sometimes impossible to seal, no matter how carefully you trim away the flash. To solve the problem, wrap a short piece of Teflon tape around the top of the cartridge. When you screw the unit together, the tape will act as a seal.

*Craig Baxter, Waterloo, Ontario, Canada*

(Continued on page 14)

**PLEASE NOTE:** be sure to print your name and full address clearly on every letter and sketch you send to "Pit Tips." We have to throw away many good tips because we don't have the senders' names or addresses.



# TROUBLESHOOTING

by FRANK MASI

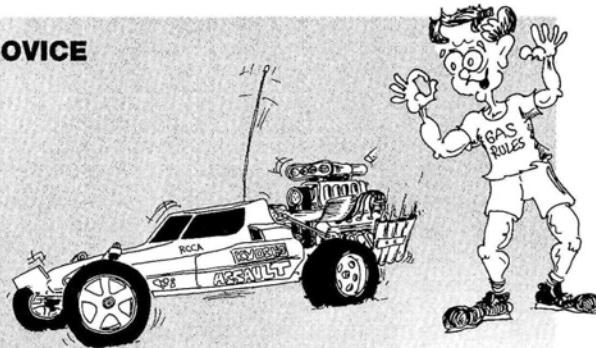
If you have a technical problem that your hobby shop or racing friends can't resolve, give us a shout at Radio Control Car Action, and we'll see if we can chase down an answer for you. Questions should be of a technical nature and should be addressed to Troubleshooting, Radio Control Car Action, 251 Danbury Road, Wilton, CT 06897. We regret that, owing to the tremendous number of letters we receive, we can't respond to every one.

## NITRO NOVICE

I'm thinking of buying a Kyosho Assault from a friend. I plan to do a little work to improve the suspension, I don't have much experience with gas cars, but I did help my friend build an Assault and a Kyosho Nitro Brute. I want to buy an engine that has a recoil starter, and I know that the O.S. CZ-R .12 has a recoil in the Outlaw Rampage. Does it come with one when you buy it separately? Can I order just the recoil system? Will it fit the stock .12 engine that comes with the Assault? Would an O.S. .21 SE-R be too much power for this car?

If you're looking for a .12 engine, the O.S. CZ-R is about the best one you can get. If you plan to buy just the engine, the pull-starter system must be ordered separately. Here's what you'll need: from Tower Hobbies, an O.S. crankshaft that's designed to work with the pull-starter (part no. 21202000, \$14.95); from Kyosho, a special one-way bearing (part no. FD-24, \$9.95); a special backplate (part no. FD-22, \$4.50); and, of course, the pull-starter mechanism (part no. FD-23, \$10.95).

The engine that comes with the Assault is an O.S. CZ-2. This engine has a ripcord starter that uses the



same crankshaft as the one you'd need to convert the CZ-R to a pull-start.

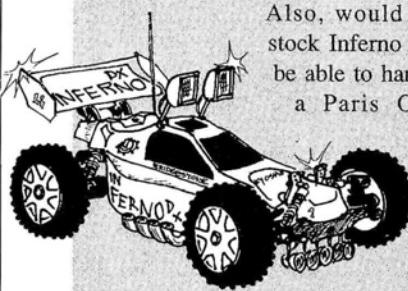
If it's performance you're after, buy a hand-held, 12V starter with a wheel attachment. This avoids the extra rotating mass that a pull-starter adds; simply bump the starter wheel against the engine's flywheel. Many authorities claim that their cars' performance has improved drastically since they've removed the pull-starters.

Forget the .21 engine. If you've ever seen one of these beasts power a  $\frac{1}{8}$ -scale car, you know that installing one in a  $\frac{1}{10}$ -scale car wouldn't work well; it produces too much power for even the  $\frac{1}{8}$ -scale cars. A smaller car would probably explode!

## INFERNO UPGRADES

What does a stock Kyosho Inferno DX need to become an Inferno?

Also, would the stock Inferno DX be able to handle a Paris O.S.



RX-B .21 engine, or the regular, unmodified, O.S. RX-B?

When Kyosho designed the

Inferno, no expense was spared to make it the most competitive car out of the box. The DX version was designed to allow gas-heads on budgets to become involved with  $\frac{1}{8}$ -scale off-road. Even if you want to race with the Inferno DX, you don't need all the Inferno's components; with a few upgrades, it will be able to compete against any car. Most gas experts think these are essential to make the DX perform as well as the Inferno:

- A bearing kit (H-037) is a must; it will greatly enhance a car's performance and durability.

- To transfer power more effectively to the front wheels, replace the DX's front axles with universal drive shafts (BS-20).

- The DX's shocks work well, but for competition, you should replace them with the large-volume ones for the Inferno (BSW-27—fronts; BSW-28—rears).

- I also recommend that you use a hardened gear set: a small bevel gear (BSW-1) and a large bevel gear (BSW-2), a flip-top fuel tank (BS65) and an adjustable center diff (BSW-34).

## FELONIOUS FUEL

I've owned an Outlaw Rampage since Christmas, and it ran perfectly until a couple of weeks ago. The engine is leaking fuel. When I drive my truck, the servos go crazy after about 20 feet.



The fuel that leaked out of your engine probably entered and contaminated your receiver. Ideally, you should send the receiver back to its manufacturer for service. If you'd like to try to fix it yourself, separate the case halves, take out the printed-circuit board and let it dry. Most pc boards can be cleaned with common motor spray, but I don't advise this because the solvents in the spray might damage your connectors. If you completely clean the board (use isopropyl alcohol and a Q-Tip) and still have the problem, you'll have to send the receiver back to the manufacturer.

To avoid this problem in future, wrap your receiver in a waterproof, fuelproof material, and keep it away from the fuel tank and the engine.

## IGNITION INQUIRY

Are the Kyosho Rampage and Outlaw Rampage good for beginners? Are O.S. CZ-R .12 engines good?

Are they hard to break-in?

Besides a radio and fuel, what else do I need to get the car going? Is a Futaba S148 servo powerful enough for a truck?



properly. If you run the engine too rich, however, it won't reach a proper operating temperature.

Most  $\frac{1}{10}$ -scale gas cars come with pull-starter mechanisms. If you buy one that doesn't, you'll need a 12V, electric, hand-held starter. You'll also need a glow-plug igniter and a battery pack to power the car's radio system—usually just four AA cells.

In a truck, I recommend that you use a servo with at least 40 ounce-inch of torque. The Futaba S148 has 42 ounce-inch of torque, so it's perfect for a truck. It's also fairly fast, with a 60-degree/22-second transit time.

## RAMPAGE RUMORS

I've been told that the .12 engines in  $\frac{1}{10}$ -scale gas trucks are difficult to start. My local hobby shop says I can't use a bigger engine. Can you please help?

A .12 engine is hard to start? Nothing could be further from the truth! As long as certain guidelines are followed, there's no reason why a gas engine shouldn't start easily and last a long time.

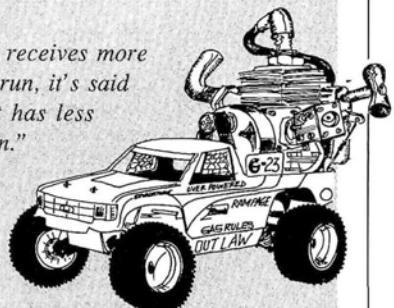
First, it's important to read the manufacturer's instructions about proper carburetor settings. This is the most crucial adjustment you can make to a gas engine. A carburetor's adjustment needle controls the fuel/air mixture that's delivered to the combustion chamber. Some carbs have two needles: one for low-end mixture and one for high-end mixture.

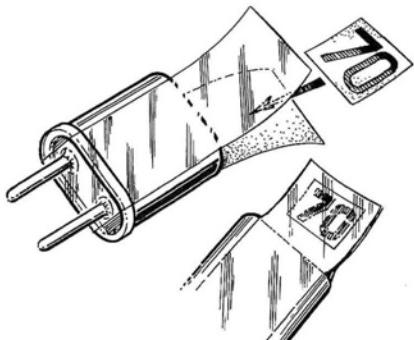
Having the correct fuel/air mixture is critical to an engine's performance. Fuel contains vital lubricants that protect an engine from wear and failure. The more fuel there is in the mixture, the more lubricant an engine

receives. When an engine receives more lubricant than it needs to run, it's said to be "set rich." When it has less fuel, it's said to be "set lean."

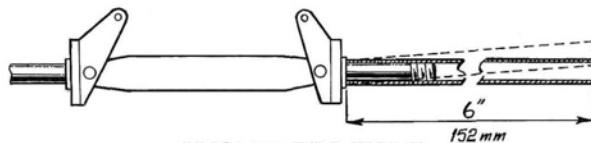
All engines must be broken-in—period! This process varies according to manufacturer, but a rule of thumb is to run the engine rich for the first three or four tanks of fuel. You'll know whether your engine is set rich by watching the exhaust (a rich engine produces clouds of blue smoke) and by listening to how it runs (it should sound as if it's slightly "loaded," i.e., it doesn't reach high revs easily).

You'll find that a .12 engine that runs well produces more than enough power for a  $\frac{1}{10}$ -scale car or truck; you don't need a larger engine. If the kit you buy comes with a .12, keep it!



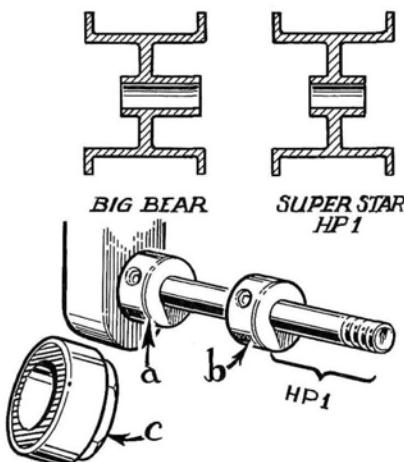
**CRYSTAL I.D.**

When you wrap transparent tape around a crystal to form a pull tab, write the channel number on both sides of a small square of paper, then trap it between the tape tabs as shown.  
Sean Bota, Anaheim, CA

**ANGLE TELL-TALE**

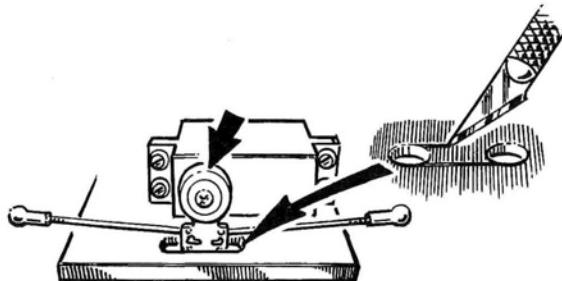
Before setting up the caster, camber and toe-in angles, lengthen the axles by pushing a tightly fitting 6-inch-long metal tube over them. The longer axles make it much easier to see and measure the offsets.

Gregg Scott, Kansas City, MO

**BETTER BEAR HANDLING**

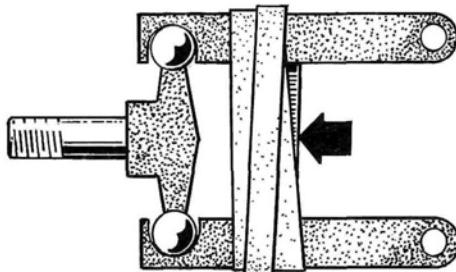
To improve the Big Bear's road holding you can fit it with HPI Star wheels. The difference between Bear wheels and HPI Star wheels is shown. To compensate, install a Du-Bro wheel collar (a) tightly against the hub carrier to stiffen the long axle. Install a second collar (b), as shown; it will act as the backstop for the wheel. Put the wheel on the axle and fit the retainers. (To accommodate metric axles, open the collars slightly.) On the rear wheels, you'll have to modify the adapter (c) for the HPI wheels by removing the shaded area with a Dremel grinder.

William Kolster, Burke, VA

**SERVO-SAVER CLEARANCE**

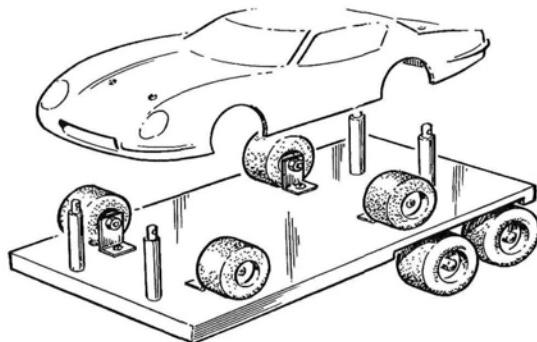
When you try to install a servo-saver, the chassis sometimes gets in the way. To make room for it, drill two holes, as shown, and connect them with a couple of knife cuts to make a cutout in the bottom of the pan. To keep dirt out, put a patch of electrician's vinyl tape over the bottom.

Jason Dell, Niles, MI

**HIGH-RIDER BALL WEAR**

If your hub-carrier ball joints wear out, wrap rubber bands around the top and bottom suspension arms to keep the balls firmly in the ball cups. This will eliminate wobble in the hub carrier, and it will restore your car's stability.

David Princz, Brantford, Ontario, Canada

**MAKE-BELIEVE TRAILER**

You can make this economically out of spare parts. The flatbed is from a McAllister truck, and the wheels are bolted to metal brackets. Four spare body-mounting posts will support an empty body shell. This trailer and its load are so light that even modestly powered cars can pull them.

Ed Worcester, Salem, OR



# INSIDE SCOOP



by CHRIS CHIANELLI

**IN SEARCH OF FUN AND GLORY, 'CAUSE LIFE'S TOO SHORT TO BE A SHEEP!**

## Championship Breeding from KYOSHO



RDP D 13

RDP D 14

This past year, the name Inferno consistently found its way into the top 10 winning spots in 1/8-scale races around the world, again proving Kyosho's ability to produce a world-class R/C race car. Many features that make the Inferno such a dominant force in 1/8-scale gas off-road have been carried over to this new Inferno ST 4WD stadium truck. These features include dual disk brakes that adjust from the center diff, an aluminum pan chassis, an easy-to-remove aluminum radio tray, easy-access front and rear diff cases with factory-installed all-metal gears, and black Delron oil-filled shocks like those found on the Inferno DX. The Inferno ST is aimed at the newcomer who needs to hold down entry costs and wants to upgrade to full-blown Inferno features in the future.

### Calling all Followers of the Crystal



**R**adio-control frequency crystal, that is. I'm proud to broadcast a premier event—the 1993 New England R/C and Hobby Show to be held at the Aleppo Shriner's Auditorium in Wilmington, MA, on Friday, April 30 through Sunday, May 2. This big show boasts 200 booths that will feature all types of radio-controlled goodies. The Aleppo Order of Shriners is determined that this will be "a hassle-free show"! If you need help with transportation, accommodations or booth setup, call (617) 665-6466 or (508) 657-4202; fax (508) 657-8950; or write to Shriners Auditorium, P.O. Box 1008, Wilmington, MA 01887-0578.

## CHOOSE A JUICE



Team Losi's two new fluids for the Hydra Drive allow you to fine-tune the state-of-the-art traction-control system to suit any track conditions.

Using the new "light" fluid will give your car an added advantage on very bumpy tracks by allowing the Hydra Drive unit to absorb shocks more easily. Also, the lighter fluid makes the Hydra Drive "spool-up" more smoothly, so traction on very slippery tracks will be increased.

The new "heavy" fluid is intended for racing trucks with large, heavy tires. Heavier fluid actually sets the Hydra Drive "tighter," so it does more of the shock absorbing than the friction slipper which, in turn, can be set more loosely.

To have the right stuff, you need the right juice!

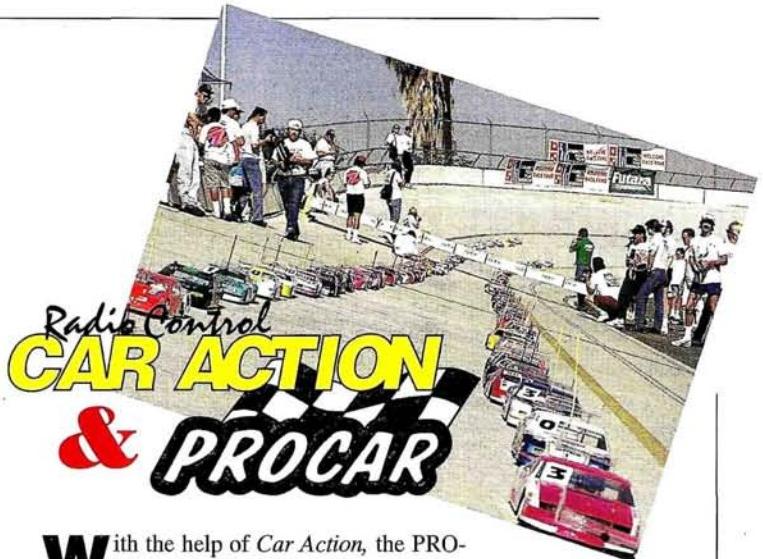


## Silent Control

For a number of reasons, which I won't go into here, we haven't heard enough about the fine line of KO radios.

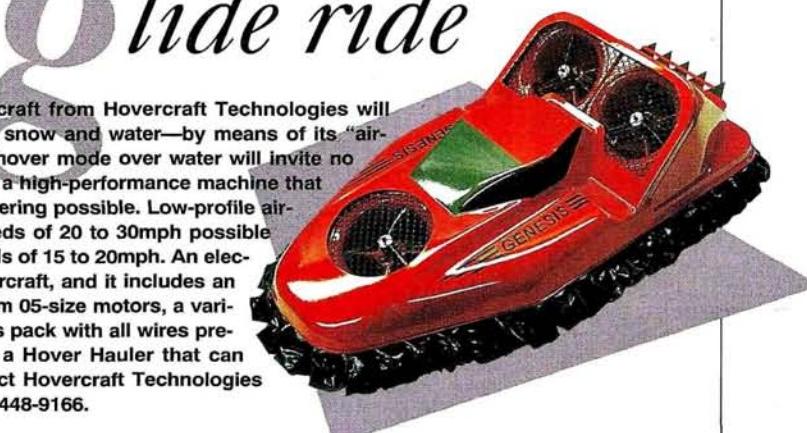
Let me tell you right now, they're excellent radios and are second to none. Anyway, they're now handled by Great Planes Model Distributors.

Pictured here is the EX-1 FM (left) and the EX-10 PCM/PPM. Also pictured is the incredible 1001 servo (still the fastest production servo in the world) and its metal-gear brother, the 1003.

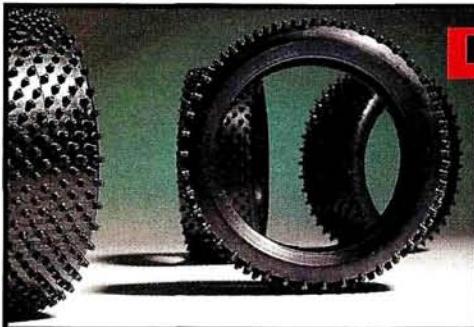


**W**ith the help of *Car Action*, the PRO-CAR (Professional Radio Operated Championship Auto Racing) \$25,000 World Series is coming to tracks across North America. Other sponsors are PSE, Duratrax, HPI, Sanyo; Panasonic, TRC, Trinity, Team Class, Bud's Racing Products, Peak Performance and Protoform. PROCAR believes it's time for a change and that all racers should have a chance to win. Through the PROCAR licensing and points program, racers will compete locally against other racers. There will be three levels of competition licensing, and drivers will compete only against other drivers in their own division. These divisions are: Sportsman Challenge for hobby-level drivers who like the challenge of stock racing; Formula-America for drivers who like the challenge of modified racing, but aren't supported by the major factory teams; and Pro Series for expert drivers with a winning track record. For more information, write PROCAR, 288 E. Maple #266, Birmingham, MI 48009, or call (313) 549-8243.

## Slide ride



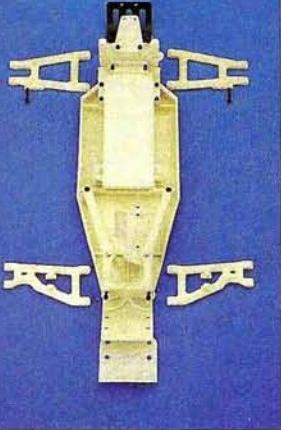
**G**enesis, a 30-inch-long, 14-inch-wide hovercraft from Hovercraft Technologies will travel on almost any surface—mud, gravel, snow and water—by means of its "air-cushion" flying. Genesis floats, so going out of hover mode over water will invite no catastrophes. The manufacturer claims that this is a high-performance machine that separates lift and thrust and makes stationary hovering possible. Low-profile air-jet outlets and high-velocity duct work make speeds of 20 to 30 mph possible using a 12V battery. A 7.2V battery produces speeds of 15 to 20 mph. An electronic accessory pack is also available from Hovercraft, and it includes an Airtronics two-stick radio, three modified 36,000 rpm 05-size motors, a variable-resistor speed controller and a wiring harness pack with all wires pre-cut to the proper length. Hovercraft also makes a Hover Hauler that can carry any 1/10-scale car. More on that later. Contact Hovercraft Technologies Inc., P.O. Box 5226, Lafayette, IN 47903-5226; (317) 448-9166.



## Design Specific

Pro-Line's new 1/8-scale tires made their debut at the 1992 Off-Road World Challenge when they were used by two top drivers in the A-Main. The sharp-spike/diamond design is molded with Pro-Line's original XT compound—an advanced lightweight racing rubber blend. Front and rear direct fits are available for Kyosho, Pirate and Mugen Narrow 1/8-scale wheels. For more information, contact Pro-Line USA, 201 W. Lincoln St., Banning, CA 92220; (714) 849-9781.

## Cannot Fold, Spindle or Mutilate

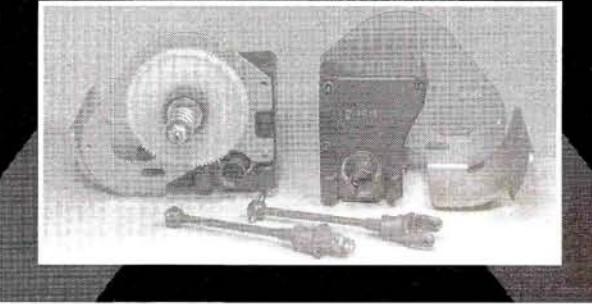


Molded from an exotic blend of non-brittle plastic resins, the new RPM RC10T Ultra Molded chassis has fantastic memory and will not bend or "tweak." Having the same wheelbase, front-end kick and steering geometry as the RC10T, all parts bolt to this tough chassis. The kit includes: ball-bearing-

mounted bellcranks, front and rear arms, a mini-bumper, a tranny brace, a rear bulkhead and rear motor-protector plates. The molded-in battery tray accepts seven cells, and the entire chassis can be dyed. Suggested price: \$79.95. For more information, contact RPM, 14978 Sierra Bonita Ln., Chino, CA 91710; (714) 393-0366; fax: (714) 393-0465.

### Double X from TEAM LOSI

The new Double X transmission from Team Losi is a new design using the latest composites and high-strength alloys. The lightweight Double X has a lower center of gravity and a very low drag coefficient, which gives your car or truck straighter starts, quicker acceleration and longer run times. The Double X features: precision-tooled, extra-wide gears; tungsten carbide "hard balls"; a grooved thrust-bearing assembly and an easy-to-adjust differential that does not require disassembly. It's available in 2.19:1 (buggy) and 2.61:1 (truck) final-drive ratios. The Losi Hydra Drive will fit directly onto the Double X tranny. If you act now, Team Losi will include a free set of universal dogbones. Call (909) 465-9400.



## Winning by Design

### • The TRINITY Championship Series™ •

Trinity's Championship series of motors is well named. The 1991 record books clearly show the Championship Series has been the hands down winner in all types of modified racing.

1991 NORRCA 4wd Dirt Oval.....	National Champion
1991 ROAR 1/10th On-Road.....	National Champion
1991 ROAR 2wd Dirt Oval.....	National Champion
1991 ROAR 2wd Off-Road.....	National Champion
1991 ROAR Monster Truck.....	National Champion
1991 Cleveland Indoor.....	National Champion

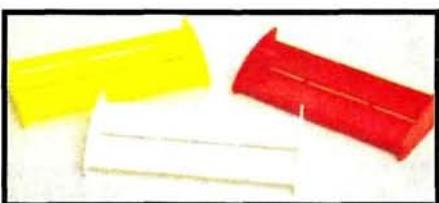
Championship motors are fast and are the first specifically designed to use Sanyo's new 1700SCRC and Panasonic's P170 SCR batteries.

RC1700	Nuclear Meltdown™	(9T, Dbl)	\$80
RC1777	Kevin, Kevin™	(10T, Trpl)	\$80
RC1778	Helter Skelter™	(11T, Quad)	\$80
RC1779	Speed Metal™	(12T, Trpl)	\$80
RC1780	Flash Point™	(13T, Sngl)	\$80
RC1781	Buzz Saw™	(14T, Dbl)	\$80
RC1782	Armageddon™	(15T, Quad)	\$80
RC1783	The Classic™	(16T, Quint)	\$80
RC1708	Joel Magic Johnson ®	(17T, Trpl)	\$80

Trinity Products, Inc., 1901 E. Linden Ave. #8  
Linden, NJ 07036 • (908) 862-1705 • FAX 862-6875

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**TRINITY**



**T**hese Mugen 1/8 scale wings come molded in the colors you see here. Because of their dual-plane, slotted design, they're reported to create more lift for greater downforce. For more information, contact Mugen USA Ltd., 7021 Veterans Ave., Brooklyn, NY 11234; (718) 251-7660; fax: (718) 241-8435.

get  
DOW  
N  
with colorful LIFT

'Twas not so long ago when Team Ugly (yes, that was really their name) ruled "hideous and hatin' it" on the national off-road racing circuit. These guys made many attempts to go international with their racing talents, but Team Ugly was so ugly that they were denied entry into all foreign ports of call, save one: Tasmania. Unfortunately, the off-road scene there consists mainly of run-offs between aard-varks and anteaters, with an occasional duck-billed platypus thrown in. Too bad; the Team Ugly boys would have fit right in. A free six-month subscription to *Radio Control Car Action* goes to the reader who guesses who fashioned this "concours-winning" beauty out of cardboard from a case of Michelob beer. Send your answers in care of me here at *Car Action*.

## Ugly Power



## ZIP PAK™

Professional Power for Pennies...

It has been said the human hand is better than a computer at assembling battery packs. Don't believe it! Computers don't have bad days. They don't break up with their girlfriends and they don't have headaches. People do. That's why they don't always do the same job the same way twice. They're only human.

That's why Trinity uses an exclusive, computer-controlled, automated assembly system for their Zip Pak. Reliability and consistency are programmed in and never vary.

This automation is combined with the very finest materials. The cells are Sanyo KR1300SC (1300mAH) and there has never been a world champion that didn't run Sanyos. They've never lost! All tabs are pure nickel and as short as possible to minimize resistance. Each is double welded, and all wires are pure copper with silicon insulation. The entire assembly is pressed into a precision fitted tube which protects it from the rough and tumble world of racing.

As the bare, assembled pack nears completion, it is connected to an instrumented quality control panel which measures all facets of the pack's performance. Only then is the Zip Pak label applied.

The result is the lowest cost, highest quality sport pack available.

Buy several as back-up spares. Never be short of power.

**TRINITY**

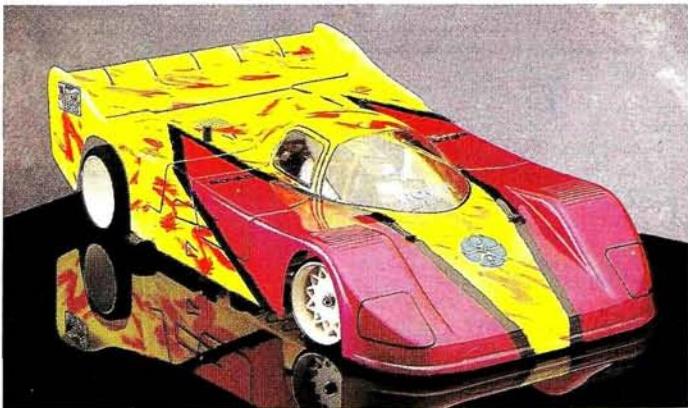
Trinity Products Inc

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# READERS' RIDES

*"Readers' Rides" is our way of recognizing the unique, innovative—and sometimes bizarre!—vehicles that our readers have created. Send us a sharp, uncluttered, well-exposed color photo of your car or truck (no Polaroids, please!), along with a brief description, to Readers' Rides, R/C Car Action, 251 Danbury Rd., Wilton, CT 06897. If the Ayatollah of Radio Controlla chooses your photo, you'll receive a one-year subscription to Car Action, or an extension of your existing subscription. You'll also be eligible for the fourth annual "Reader's Ride of the Year Contest" in the fall of 1993. Write your address and phone number on your letter and on the back of each photo you send, in case we need to contact you.*



**ROMEO'S RIDE**

Romeo Collado, a commercial photographer from Honolulu, HI, sent us this picture of his stunning RC10L. Underneath the Bolink body are a Composite Craft chassis, a Novak 410 M1C speed controller, a Futaba 132H high-speed servo and an EX5 KO Propo radio system. Other goodies include an Associated heat-sink motor pod and a rear damping post brace. Thanks for the ride, Romeo; it's a hot one!

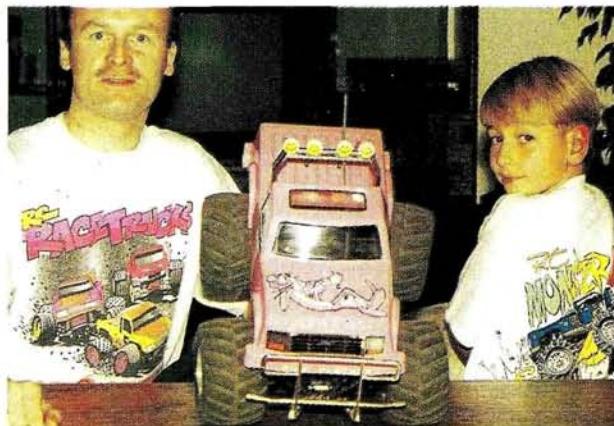


**THE RECYCLER**

Tad Deutsch, from Coeur d'Alene, ID, puts all his efforts into recycling. Tad's ride is a Traxxas Sledgehammer, and its body has been modified extensively with aluminum cans and aluminum foil. Powering his Recycler is a Trinity Boss motor with a Traxxas XL-1 speed controller. We hope that he can turn the body in some day and get his 5¢ deposit back.

**PINK PANTHER**

German readers Heinrich Schwarze and 6-year old Nico Wojcik sent us a picture of their truck, the "Pink Panther." Heinrich writes, "We both enjoy your magazine immensely. Nico isn't able to read the text, but he admires the powerful pictures. The subject English is only taught in Germany after four years of school. Our machine, the 'Pink Panther' is a Royal Crusher that we plan to modify soon." Well guys, there's a full year of *Car Action* coming your way. Maybe that will help you to get your truck all tricked-out. Enjoy!





### WAX OUR CARS

James Oliva's Associated 10L SS is outfitted with TRC foam tires, a Tekin ESC, Team Arlington batteries, a Reedy modified motor and an Andy's body that he painted with Pactra spray paint; all the numbers, the hood and the rear quarter-panel lettering are hand-painted. James also added an interior, complete with an on-board camera.

### LUCKY LOSI

Mark Madill of Calgary, Alberta, Canada, writes, "I read and enjoy *Car Action* every month and have recently built an R/C of my own." Mark's Junior T is powered by a Twister Scorpion stock motor and is equipped with a Novak 410 M5 ESC. A Sanyo battery pack provides the punch. Mark painted the body with spray paint, using tips from *Car Action* how-to articles. Good job, Mark!



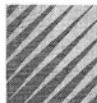
### HAPPY FAMILY

This R/C family portrait comes to us from Dennis Krug in Flemington, NJ. Dennis gathered his five R/Cs and two of his father's for this group shot. On top is a Parma Hemi Coupe, which is powered by a Trinity Tony Neisinger motor and a Tekin 410S ESC. The middle row contains (from left) a completely stock Tamiya Fox, dad's Tamiya Lunch Box, a stock Kyosho Ultima II and Dennis's Lunch Box. On the bottom is dad's original Tamiya Sand Scorcher, another Kyosho Ultima II and a stock Tamiya Thunder Dragon. That's quite a collection you guys have! Now all you have to do is build an R/C garage.

### FLYIN' CANADIAN

Bernard Bouffard sent us this picture of his Eastern Modified hybrid all the way from Granby, Quebec, Canada. Bernard started out with a Trinity Reflex 10 and added a Stealth transmission and Raborn rear axles. A Tekin 410K ESC feeds the power to a Trinity Slot Machine motor with help from a Trinity battery pack. Bernard's radio is an Airtronics CL/P system, and he uses a Trinity receiver pack for a glitch-free ride. A custom-made Eastern Modified body tops off the package.



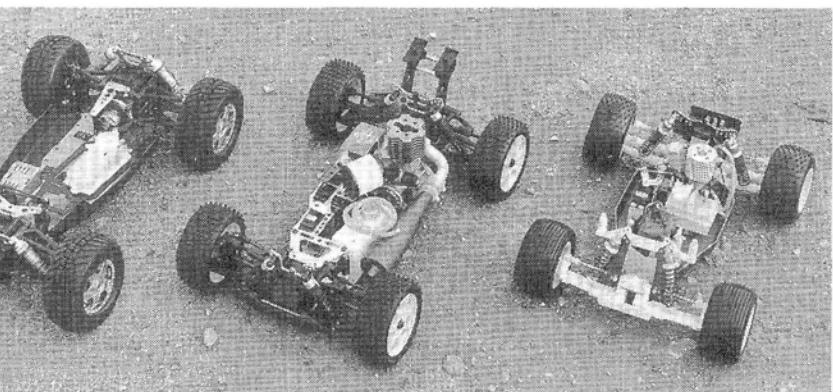


# NITRO NEWS

## OFF-ROAD RIOT

by JEFF BRONSTEIN

**B**ECAUSE OFF-ROAD electric is the largest segment of competitive racing, it should come as no surprise that gas-powered off-road racing has become so popular. In fact, it's the fastest-growing segment of R/C racing. I'm not talking about vacant-lot or playground demolition squads, but full-blown, flat-out racing and all the grit that goes with it. I'm a die-hard on-road fanatic, but like many, I started in off-road racing. Occasionally, I forget that the earth was created with off-road racers in mind. Recently, however, I revisited the "wild side" of racing and discovered an untamed horde of nitro-powered, off-road dirt demons,

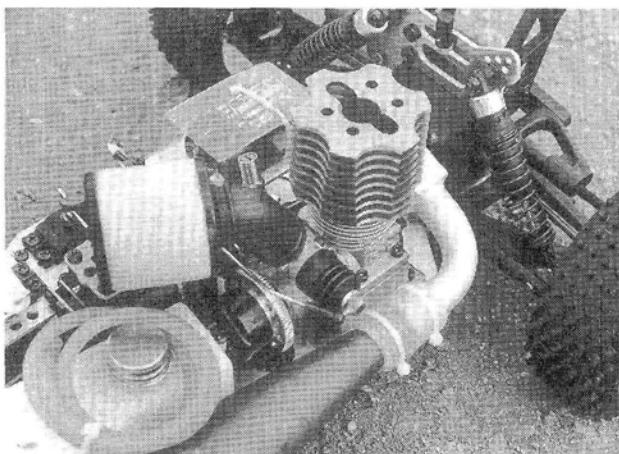


*The Mugen Sport Truck (left) has many of the high-performance features found on the competition Super Sport '93. The Kyosho Inferno and Inferno DX (center) have scorched the competition from coast to coast. The Nitro Hawk (right) from Traxxas is the latest in 1/10-scale off-road racing.*

segment is no exception, but nowadays it isn't just a steady hand and a good eye that make a world-class racer. The equipment has become more sophisticated. Creating a competitive race car is more the stuff of mechanical

engineers and specialized production teams than of kitchen-table craftsmen. Although the cars' designs are more complex, they are also easier to build, maintain and drive. Off-road gas cars look, sound and perform more like full-scale race cars, with a lot fewer hassles.

One-eighth-scale buggies are as fast and reliable as they are high-tech. They have full four-wheel suspension systems, including double-wishbone-type suspension arms, oil-filled shocks and adjustable stabilizer bars. Huge pin-spiked tires and a shaft-powered 4WD are coupled to a high-



*The 1/8-scale 4WD buggies are powered by potent .21 2-stroke engines such as this Paris modified O.S. RXB. These dynamos can generate nearly 2hp at nearly 35,000rpm.*

that were heating up racing like never before! This new breed of off-road racer is more challenging, more responsive and more powerful than anything that has ever hit the dirt.

Off-road racing competition has always been very intense, and the gas

performance 3.5cc 2-stroke engine that can really kick up the landscape. These buggies are no lightweights; they weigh nearly 8 pounds and can accelerate to speeds of more than 50mph in less than 3 seconds. Driving one of these wild monsters is unlike anything in the electric kingdom. You can feel the power as the cars blast past the drivers' stand. Stopping is also no small feat. Dual adjustable-bias front and rear disk brakes slow the big buggies down to take the corners.

Two of the most popular cars are the Kyosho Inferno and, for beginners, the Inferno DX. Based on the popular Burns, the Inferno has been scorching the competition across the country. [Editor's note: and around the world. The Inferno is the world champ.] It has three sealed gear differentials, dual disk brakes, an updated radio-tray layout and a lightweight chassis.

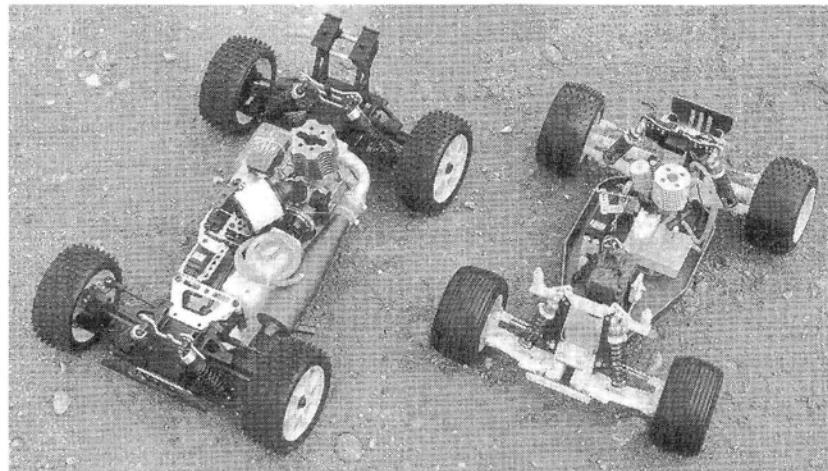
Also new is the redesigned Mugen Super Sport '93. Its ultra-lightweight chassis, steel universal-joint driveshafts and single-shaft 4WD system produce crisp acceleration and World Championship speed. If these world-class cars weren't enough, the new Super Pirate M3 has all the best features of the M1, and it also has

new hardened-steel crown gears, a longer 7075 chassis, adjustable hard-coated shocks, dual carbon disk brakes and an improved suspension.

Though smaller and less complicated than buggies, 2WD nitro-powered off-road stadium trucks are just as challenging and well built. Most of the new nitro trucks are based on well-designed electric versions. Whether it's off-road or oval racing, the stadium-truck chassis adapts perfectly to nitro power. Full four-wheel suspension and plenty of wheel travel are necessary to keep all the power on the ground. Their small .12 and .15 engines are very potent and can propel them to speeds of more than 40mph. Kyosho's Outlaw Rampage may have started the ball rolling, but the new competition is fierce. In fact, there are no fewer than six new nitro stadium trucks ready to heat up the 1993 racing scene. The Schumacher Nitro 10, Traxxas Nitro Hawk and Associated's unnamed nitro-powered RC10T are just three of them. In addition, there are several excellent conversion kits for the RC10T and the Losi LX-T, including the DuraTrax, Dudgeon and Moody Automotive conversions.

Except for the 2-stroke powerplant, nearly everything on a nitro-powered stadium truck is the same as it is on an electric. The chassis, suspension, tires and wheels are the same, so many veteran electric racers will have no problem making the switch. Several trucks have the same transmission as the electric version, coupled to a centripetal clutch and pinion gear on the engine crankshaft. The Schumacher truck and many O.S. CZR-powered trucks also include a convenient pull-starter.

Gas trucks are just slightly lighter than electrics. An engine, an exhaust system, a fuel cell and a throttle servo and linkage replace the 6-cell pack, the ESC and the electric motor. Gas-truck performance easily rivals that of electrics on the track, and on long straights, a gas truck will leave the electric coughing in its smoke.



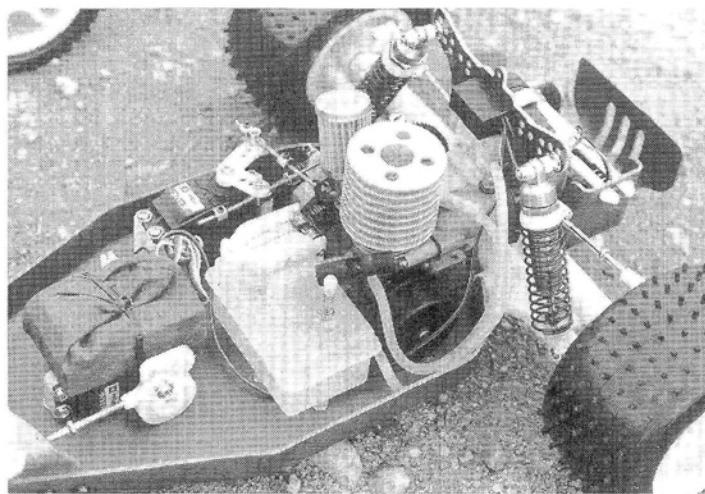
**The new Nitro Hawk (right) represents a new generation of gas off-road racing, while the Kyosho Inferno (left) is one of the latest in a long list of world-championship  $\frac{1}{8}$ -scale racing buggies.**

If more speed and realism weren't enough to persuade you to try nitro-powered off-roading, how about races that can last far longer than the typical 4-minute electric main? Because gas-powered cars are refuelable, they can

Kyosho Off-Road World Challenge was a resounding success. The competition included both  $\frac{1}{8}$ -scale buggies and  $\frac{1}{10}$ -scale nitro trucks. This year, the competition will resume with the West Coast Gas Off-Road Championships, sponsored by Kyosho and (of course) Radio Control Car Action. The competition should be fiercer than ever, with some familiar electric racing names making their nitro off-road debut (watch for race coverage coming soon). Also, the new ROAR  $\frac{1}{10}$ -scale I.C. (internal combustion) racing rules have been submitted to the Executive Committee for approval, and they should be included in the next rule book. The inaugural Off-Road

Nitro Nationals will produce the first off-road nitro champion. Will it be Cliff Lett? Jack Johnson? Mike Swauger? Or you? (It could happen...it could!)

Like most true R/C racing addicts, I abhor it when people lump our vehicles in with plastic supermarket "playthings" with wire antennas. One look at a nitro-powered off-road racer is enough to convince any skeptic that these aren't mere toys. I pity the fool who sits near a corner of the racetrack where these nitro-burners are tearing up the turf. Dirt for dinner, anyone? ■



**The Nitro Hawk's chassis and rear suspension are tough. A cleverly designed exhaust system and a rear-mounted battery platform were developed just to produce a high-performance racing truck.**

race virtually non-stop (until the receiver batteries run low). Most main events last for at least 15 or 20 minutes, and some can last for an hour or more. Many electric races are won and lost in the first few seconds of the race, but a gas race can have several front-runners before the outcome is finally decided. There's a lot of strategy involved in pacing the field, pitting for fuel and deciding when to make your moves.

Kyosho is dedicated to promoting these highly competitive classes, and it seems to be working. Last year's



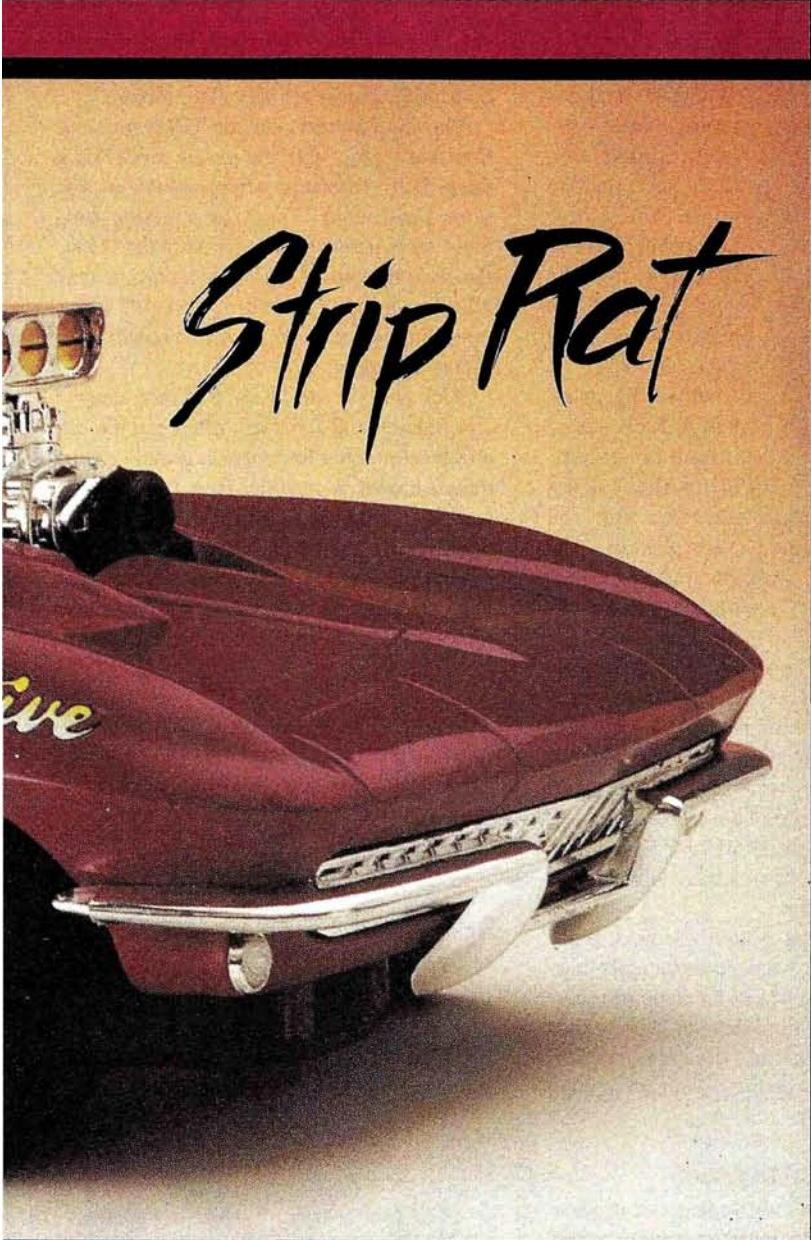
## HOME-BUILT PROJECT



PHOTOS BY WALTER SIDAS

b y

COVER



O H N N H O W E L L

# Strip Rat

**W**HEN YOU think back to the tire-burnin', neck-snappin' horsepower of the late '60s' muscle cars, your mind quickly turns to Camaros, Hemi 'Cudas, GTOs and, of course, Corvettes.

Rick Vestuto of White Lake, MI, was inspired by a September '91 article about

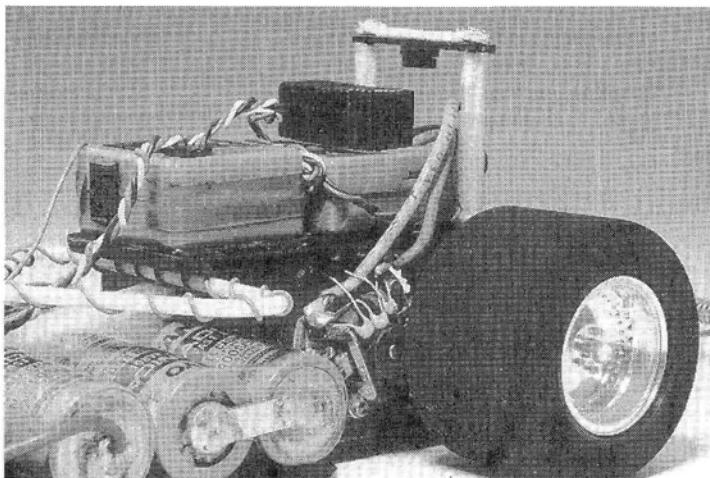
**"THE CHASSIS' REAR,  
THE AXLE AND THE  
12L REAR POD HAD  
TO BE NARROWED  
SLIGHTLY SO THAT  
THE WHEELS  
WOULDN'T PROTRUDE  
FROM THE 'VETTE'S  
REAR WHEEL WELL."**

a home-built  $\frac{1}{12}$ -scale Monogram\* Camaro built by Luis Irizarry. Rick decided to build his own  $\frac{1}{12}$ -scale hot rod, but

instead of using a Camaro, he chose another one of America's favorite street cars: a '67 Corvette.

First, Rick headed to Action Hobby in Waterford, MI, to buy a Monogram\* Corvette kit. Next, he had to come up with a rolling chassis. After comparing his Associated 12L chassis with the Monogram Corvette body, Rick concluded that there was no way that the stock chassis and the body would be compatible. The 12L wheelbase was too short for the Corvette body, but the rear was suitable for the project. Rick made a template of the 12L chassis and transferred it to an  $\frac{1}{8}$ -inch-thick fiberglass tray. To create the "raw" chassis, he cut the fiberglass with a table jigsaw.

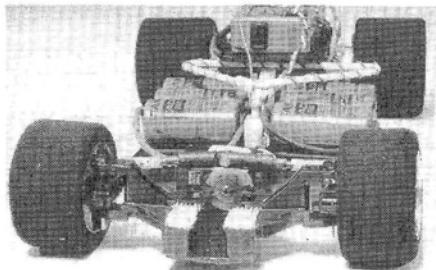
A new front end was next. To make the tires fit under the Corvette's wheel wells, Rick made the 12L front end narrower so that the front blocks almost touch each other. To create more clearance, he also installed the front wheels backwards.



**Nestled directly behind the Sanyo 6-cell saddle pack is a Trinity Boss stock motor. To add to the realism, the radio antenna is hidden underneath the body. A fiberglass tray holds the ESC and the receiver.**

The chassis' rear, the axle and the 12L rear pod had to be narrowed slightly so that the wheels wouldn't protrude from the 'Vette's rear wheel well. Once that had been accomplished, it was time to concentrate on the rolling chassis. This is where the problems started.

**• Problem 1.** Once Rick had narrowed the rear pod and shortened the rear axle, he realized that the motor had to fit between the pod. To make it fit perfectly, he had to cut off three quarters of the pod's rear block.



**The Associated 12L front steering blocks had to be installed close together to make the front wheels fit the 'Vette's wheel wells. The body is held on tightly with Velcro®.**

**• Problem 2.** The motor didn't fit. It sat too high on the fiberglass chassis. Out came the Dremel and a grinding bit. Rick had to grind down part of the chassis so that the motor would fit.

**• Problem 3.** The motor was very close to the rear axle, and Rick had a hard time finding gears to fit the car. With more help from the folks at Action Hobby, he eventually found the gears he needed—a 48-pitch, 18-tooth pinion gear mated to a 44-tooth spur

gear. Rick chose a Trinity\* stock Boss motor. (A modified motor would have been much too fast.) So far, so good. The motor had been properly installed, and the gearing was OK. It was time to install the electronics.

**• Not-so-big problem 4.** Rick was so intent on assembling the rolling chassis that he overlooked the shortage of space on the chassis for the electronics. He

had come too far, however, to be undone by another space problem. He mounted the electronics on a piece of fiberglass tray and installed it over the area where the Sanyo\* 1400 SCR batteries would have been placed on the chassis—sort of a double-decker chassis. On went his Novak\* 410 M5 speed controller and AM mini-receiver. Now it was fairly smooth sailing.

The front steering system was next. Since the front end had been so drastically narrowed, Rick used a TMS\* Centerpoint steering system and titanium linkage steering rods for more precise control. The car steers well on smooth surfaces and is predictable at high speeds.

#### BITCHIN' BODY

Testor's\* Banana Yellow was the original paint on Rick's ride, but after a quick crash-and-burn rollover, some bodywork was in order. Rick sanded and re-painted the entire body.

When Rick saw a paint scheme for his 'Vette in *Hot Rod* magazine, he went to work on his masterpiece. To fill in the light sanding scratches, he primed the body, masked it off, painted it with plum paint and let it dry for 24 hours. Then he masked off for the blue stripe, and let it dry for 24 hours. He masked off the yellow stripe and let it dry for 24 hours; then he went through the same procedure with the pink stripe.

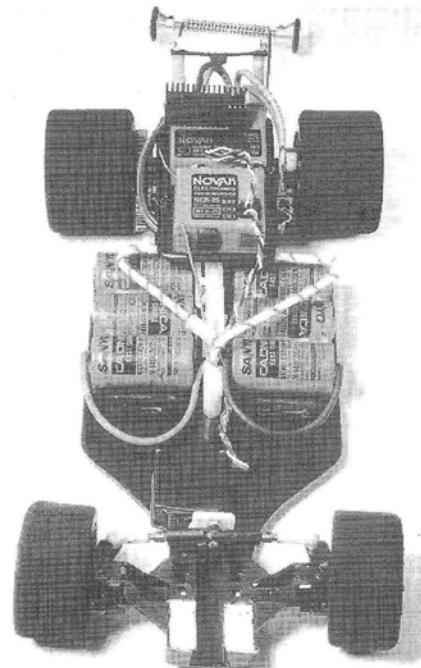
Rick noticed that the six thin coats of lacquer didn't have a super shine, so he wet-sanded the body, hand-rubbed it with fine-grit sandpaper and applied Turtle Wax paste. Now it has a super shine.

Rick had trouble with the chrome pieces; they kept falling off. The chrome plating on

the back of the pieces kept the glue from adhering. He stripped the plating off the back of the pieces to solve that problem.

Finishing touches include TRC\* blue-dot tires and wheels with the plastic model kit's deep-dish centerline wheels glued on for scale good looks. The back and side windows were painted black for a "tinted" look, the scale dashboard was added, and the rear wheelie bars from Fine Design\* were installed. Rick's 2½-month project was finally complete.

Rick and his wife, Kim, and their daughters, Lauren and Lyndsey, often run the car at a local parking lot where it usually draws quite a crowd. Sometimes Rick displays and runs his 'Vette at Action Hobby, and he's often asked what his next project will be. "A really trick Tamiya Mountaineer is my next one," he says. As soon as we get some pictures, we'll pass them along to you.



**A view of the cramped electronics under the Monogram 'Vette body. Not much room left!**

\*Here are the addresses of the companies mentioned in this article:

**Monogram Models Inc.**, 8601 Waukegan Rd., Morton Grove, IL 60053.

**Trinity Products Inc.**, 1901 E. Linden Ave., #8, Linden, NJ 07036.

**Sanyo Electric**; Battery Division, 200 Riser Rd., Little Ferry, NJ 07643.

**Novak Electronics**, 18910 Teller Ave., Irvine, CA 92715.

**TMS Enterprises**, 1840 220th St., Ste. 360, Torrance, CA 90501.

**Futaba Corp. of America**, 4 Studebaker, Irvine, CA 92718.

**Testor Corp.**, 620 Buckbee St., Rockford, IL 61104.

**TRC**, P.O. Box 1058, Albemarle, NC 28001.

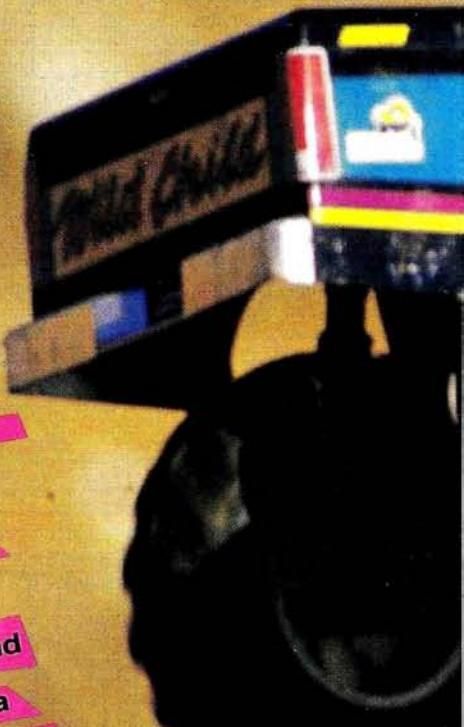
**Fine Design & Manufacturing**, 2 North St., Middletown, NY 10940.



MRC

# Thunder King

by FRANK MASI



WHEN I FIRST saw MRC's\* World Scale vehicles, I was slightly apprehensive. Would they be durable? I thought they might be merely "toy-grade" knock-offs. On closer inspection, it was apparent that the World Scale vehicles were designed to be rugged and to perform well.

I watched the two World Scale trucks—the Thunder King and the Baja King—and the Desert Thunder buggy run through a very demanding obstacle course without suffering so much as a scratch. The testing reached its peak when the Thunder King monster truck was repeatedly rammed into a cinder block wall—without breaking!

The Thunder King is the "basher" of the World Scale trio. Its large tires and ground clearance make it ideal for traversing most backyard obstacles, and its dual-front bumper can probably destroy the 5mph bumper on most Yugos. We'll look at the

Desert Thunder buggy and the Baja King racing truck in future articles, but here's an in-depth report on the biggest and baddest of the World Scale line—the Thunder King.



# Master of Dirt Disaster

**FEATURES FIT FOR A KING**

The Thunder King is a pretty tough customer. Its light, aircraft-grade aluminum-alloy chassis dissipates the motors' heat effectively. The channels in the chassis make it one of the strongest I've seen—front-to-rear flexing is kept to a minimum. All the mounting holes have been countersunk to prevent screw heads from snagging on the ground. You can install a really neat battery hold-down system that will accommodate the recommended seven cells in hump-pack or flat-pack configurations.

The front suspension features in-line steering; the axle pivots at the kingpin's center, and lateral wheel-scrub is minimal. A heavy-duty fiberglass shock tower fits into a slot on the front nosepiece for increased rigidity. Large, fully adjustable steel tie rods link the steering mechanism to the front tires and provide a means for camber adjustment.

The suspension arms are flexible enough to be durable, but suspension geometry may be altered over very bumpy terrain. Interestingly enough, the arms look as if they should have a cover—perhaps a piece of Lexan—to shut out foreign particles. At any rate, dirt and debris will probably collect in the open tops.

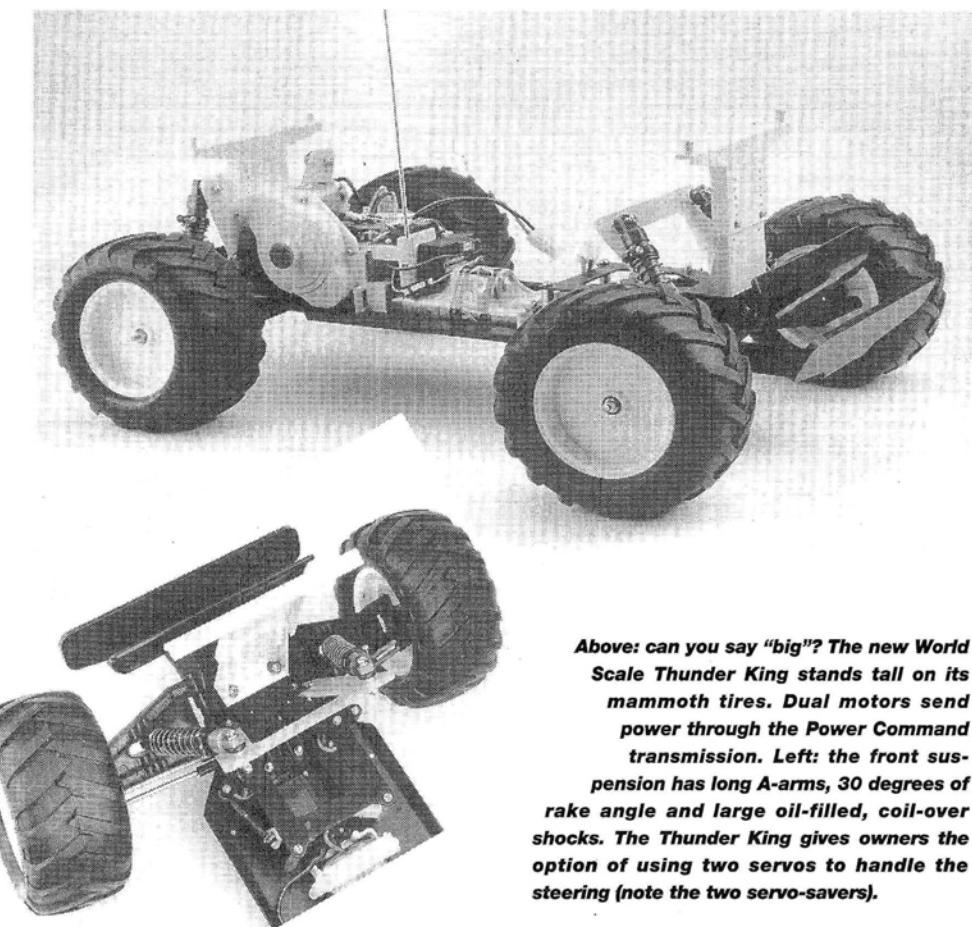
The King's optional double front bumper provides extra protection during collisions. The nosepiece on which the bumpers mount is held to the chassis with four large screws that are secured by nuts; it's very strong and shouldn't ever pull out.

The steering assembly is a sturdy, smooth, dual-servo-saver bellcrank system. Brass outer tubes pivot smoothly on the aluminum deck posts. With an additional servo and an optional Y-harness cord, this design can be set up for dual-servo operation. (Dual servo mounts are included.)

All the World Scale vehicles have MRC's exclusive Power Command transmission. This innovative gearbox has the newest racing goodies (a ball diff and a slipper clutch) and several unique features, such as a twin-motor configuration.

The ball diff will look familiar to anyone who has assembled a  $\frac{1}{10}$ -scale diff—it's just bigger! The diff rings are keyed into steel diff housings to prevent slipping. Concave thrust-bearing washers provide a greater ball contact area, and this distributes the load more evenly for smooth, "grit-free" diff action. A beefy 3x25mm cap screw holds the diff together and provides a means of tension adjustment, and a 3mm setscrew fits snugly against the cap screw and prevents the diff setting from drifting.

Internally, the Power Command tranny



uses three 32-degree pitch gears, an 18-tooth top gear/input shaft, an 18- and 33-tooth "stepped" counter gear and a 35-tooth diff gear for a final output ratio of 3.565.

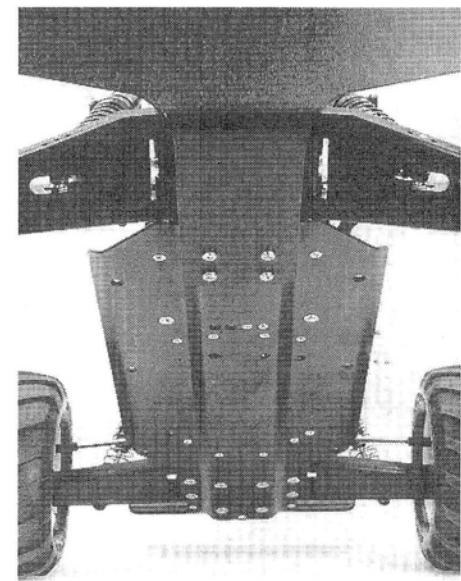
MRC gives you two spur gears—a very nice touch. I recommend that you use the larger, 69-tooth gear in most situations because it allows the truck to be geared lower and therefore have more torque for those stubborn obstacles.

The fully adjustable slipper clutch uses Rulon pads that are keyed into the spur gear so they won't slip against it. They slip against the clutch rings only, so slipper action is consistent. The clutch rings are mated to the clutch disks, and the disks and plates sandwich the spur gear and the slipper pads. Finally, the clutch disks key to each other.

The molded, one-piece gear cover has an access hole for slipper adjustments and is bolted to the Thunder King's black-anodized aluminum motor-mounting plate. This plate really keeps the motors cool.

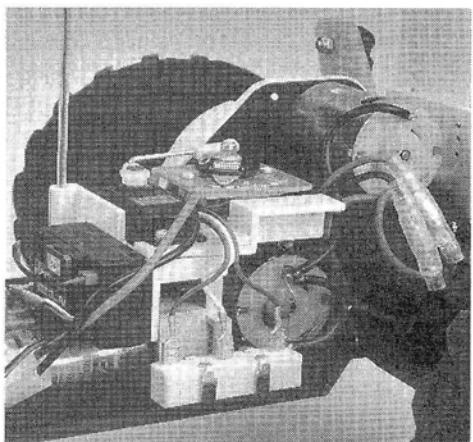
The rear suspension consists of extra-long arms, molded hub carriers and adjustable camber links. Strong-looking steel axles and dogbones are included, but the axles ride inside plastic bushings instead of bearings or bronze bushings. I don't expect these bush-

**Above:** can you say "big"? The new World Scale Thunder King stands tall on its mammoth tires. Dual motors send power through the Power Command transmission. **Left:** the front suspension has long A-arms, 30 degrees of rake angle and large oil-filled, coil-over shocks. The Thunder King gives owners the option of using two servos to handle the steering (note the two servo-savers).



**The Thunder King's Lite-Alloy chassis is channeled for extra rigidity. Screw heads are countersunk to prevent them from catching on the ground and slowing the truck.**

## THUNDER KING

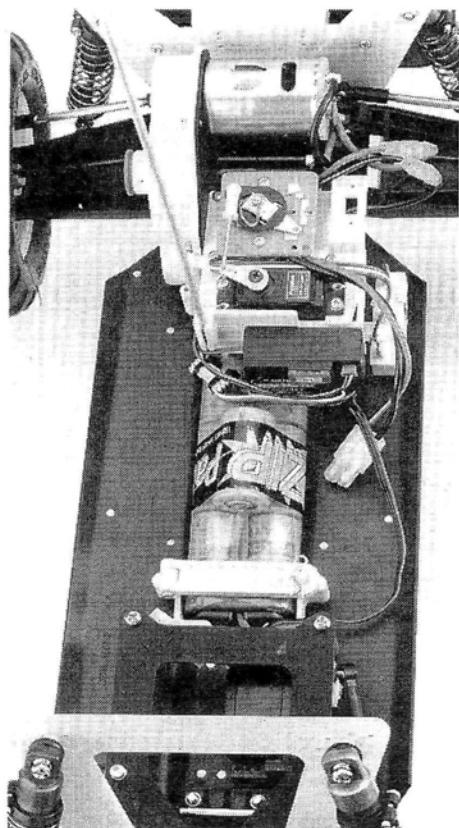


**The key to moving all of this lies here: two 540-type motors work together to provide the horsepower.**

ings to last very long, so I'll replace them with bearings soon.

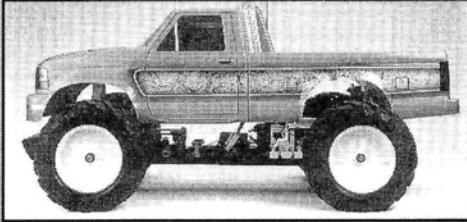
Aluminum-bodied, oil-filled shocks at all four wheels damp the Thunder King's suspension over the largest rocks and potholes. The shock caps are sealed with a diaphragm and are vented on top to allow the volume of air behind the diaphragm to change as the shock oil is displaced by the shock shaft. MRC provides three pistons for each shock so you can tailor damping characteristics.

The Thunder King comes with a mechanical speed controller so that beginning R/C enthusiasts can get on the track fast without having to buy an ESC. The controller has three-step forward and three-step reverse, and it uses a mechanical wiper arm. I'm not a big fan of mechanical speed controllers, but they do work and they're very inexpensive. Most



**An innovative battery holder allows the use of either 7-cell stick or hump packs. A mechanical speed controller is included. It rests atop a molded shelf that also holds the receiver and the antenna mount.**

## MRC THUNDER KING



Model Name.....Thunder King

### DIMENSIONS:

Overall length .....	.21 inches
Width .....	15 inches
Wheelbase .....	14 inches
Front track .....	12 inches
Rear track .....	12 inches

### WEIGHT:

Gross (with battery) ....8 pounds, 4 ounces

### CHASSIS:

Type .....	Channelled plate
Material .....	Lite-Alloy

### DRIVE TRAIN:

Primary .....	Pinion/spur
Transmission .....	Gear
Differential(s) .....	Ball
Bearings/Bushings .....	Bearings

\* not included

### HITS

- Immense size
- Virtually indestructable
- Not many obstacles can stop it
- High-quality parts throughout
- Great instructions

### SUSPENSION:

Type (F/R) .....	Single A-arm/upper camber link
Damping (F/R) .....	Oil-filled, coil-over shocks

### WHEELS:

Type (F/R) .....	One-piece
Dimensions (DxW) (F/R) .....	5½ x 2¾ inches

### TIRES:

F/R .....	MRC Monster Truck
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### ELECTRICS:

Motor .....	2 05/540
Battery .....	7 cell*
Speed controller .....	3-step mechanical

### OPTIONS TESTED:

Airtronics Caliber 3P, KO Propo PS1003 FET servo (steering), Futaba S132H servo (speed controller), Trinity 7-cell Zip Pack battery, custom-painted body by Richard Muise

### MISSES

- Mechanical speed controller is prone to burning out
- Stock kit motors are slightly underpowered; could use some more ponies under the hood

R/Cers upgrade to ESCs as they become more experienced; I'm sure that Thunder King owners will do the same.

Huge, semi-pneumatic truck tires are mounted on rigid, one-piece rims. The rims have holes in them so the air can flow freely in and out of the tire.

### BATTERIES AND ELECTRICS

MRC recommends that you use two steering servos, but I was dying to try the new KO Propo\* PS-1003 FET servo. The 1003 has more than twice the torque of most servos, so I figured that I'd need only one to steer the Thunder King's massive tires.

The servo horns in the kit are great; they're rigid and MRC includes two sets of them—sure to fit most servos. I might order additional sets from MRC to use on my other cars.

To operate the speed controller, I attached a Futaba\* S132H high-speed servo to the radio shelf (it also doubles as the speed-controller shelf) and connected it to the controller's wiper arm. The servo mount can be adjusted to fit any servo. I used double-sided tape to attach the receiver to the front of the radio shelf. The antenna mount is right next to the receiver so that its wire won't run next to any electrical equipment that could cause glitching.

## Assembly Hints

WHEN I SAW all the numbered bags in the Thunder King's parts box, I thought that the truck would be difficult—or at least time-consuming—to assemble. I was wrong, to some degree, on both points.

To make assembly easier, all the parts bags have printed labels that list the parts and the steps in which they're to be used. The instructions also include full-size illustrations of all hardware, so you can match each piece with the diagrams.

Here are some of my assembly notes, which you may find useful when you build your Thunder King.

### Front Suspension

■ The hub carriers aren't with the other front suspension parts. You'll find them and the spindle blocks with the servo-saver parts (on the same parts tree).

■ There are two sizes of E-clip for the front suspension assembly; make sure you use the right ones.

■ The pushrods (and all hardware) are shown full size in the instructions. When building, you can hold the piece to the diagram to make sure it's the correct one.

### Bumper Attachment

■ The instructions say "attach the front bumper to the nosepiece with the four screws." The box wrench doesn't fit over the two front bumper-attachment screws, so you'll have to use pliers to tighten

them. When you tighten the rear screws, use tweezers or needle-nose pliers to hold the nuts in place.

■ The instructions for installing the front bulkhead spacers are a little sketchy. They go in under the nosepiece—between it and the chassis.

■ If you plan to use the extra bumper, skip step 7-D; you'll install the bumper with the four 4x25mm round-head screws—not the 4x12 and 4x16 flat-head machine screws. It was difficult to secure the nuts to the four front nosepiece screws, because the nosepiece channels made it difficult to align the nuts.

### Steering

■ When you build the dual servo-savers, have someone compress the spring and the nylon step washer so you can secure it with the E-clip; it's really tough to do it by yourself!

■ Make sure that you end up with a right- and a left-hand servo-saver assembly. The instructions aren't really clear about this.

### Tranny

■ Excellent exploded view of the diff in the instructions helps immeasurably.

■ The diff gear was extremely difficult to install to diff housing C; the hole was too small, and I had to bevel its opening slightly. The diff's gonna be tight until it breaks in.

■ Diff joint B, as referred to in Step 10-H, is the one with the threaded hole.

■ The 69-tooth spur required in Step 13-C is the larger of the two provided.

■ Clutch disc A is the one that keys into the gear shaft's roll pin.

■ Rear axle carriers—agh, plastic bushings. If you can, spring for bearings here; it will be well worth it! I think that they should have included bronze bushings, at least. If you use the bushings, be sure to grease them well.

■ As with the front arms, the rears are secured with two different sizes of roll-pin; be sure to use the correct E-clips for each. Oh, and speaking of E-clips; don't lose any! There aren't any extras so far!

■ I had a little trouble threading the ball connectors into the rear arms, so I chamfered the hole slightly with a hobby knife to get the threads started.

■ Rear body mount. Step 17-A tells you to use 3x6mm washers; I didn't because the 3x12mm screws weren't long enough to thread into the nuts.

■ Oh! I found the spare parts bag! One of everything—E-clips, large and small diff balls, etc.

It took me approximately five hours to build the Thunder King. Not bad. The instructions were excellent—many clear photos and diagrams, and text that corresponded perfectly.

You can use a 6-cell, 7.2V Ni-Cd pack to power the Thunder King, but the instructions recommend (and I concur) that you use a 7-cell, 8.4V pack (it has more power!). A 7-cell flat pack fits in well, but I had trouble installing a 7-cell hump pack. The receiver interfered with the seventh cell, so I put the battery holder in the flat-pack position and installed the hump pack toward the front of the truck.

With a quick stroke of his magic airbrush, good buddy Rich Muise of Motion Graphics\* transformed the clear Lexan Thunder King body into a work of art. Rich has a trick new technique for "cobwebbing" using new Coverite\* products. (Look for an article on this technique in an upcoming issue.)

### THUNDER ON THE TRACK

I drove the Thunder King at an off-road track that's just 15 minutes from the *Car Action* corporate offices. The track is pretty tight—even for  $\frac{1}{10}$ -scale cars—so I thought that it would be difficult to navigate the World Scale truck around the course.

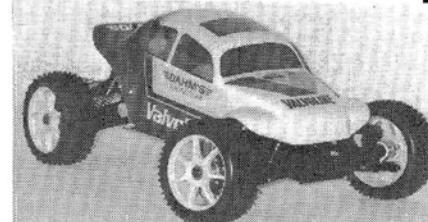
Surprisingly, the Thunder King negotiated the track's 6-foot-wide lanes with relative ease and turned in very tightly—much more so than I'd expected. The truck's size made it very stable. When I hit a track barrier (yes, it has happened to me once or twice in my life), the King drove over it as if it didn't exist.

The dual 540 motors move the Thunder King along at a good pace, but speed freaks like me will probably opt for a pair of mild modifications. The bonus of using two motors? They "share the load" of powering the vehicle, so they run cooler and last longer on a battery.

I'm still not thrilled with the mechanical speed controller. It worked well, and having reverse made it easy to get out of tight jams, but after just three fully charged packs, it began to develop "dead" spots—areas on the contacts that wouldn't pass current. I used an eraser to clean the contacts and the wiper arm and this helped, but after another two packs, the problem recurred.

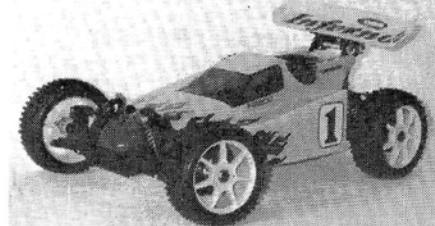
(Continued on page 86)

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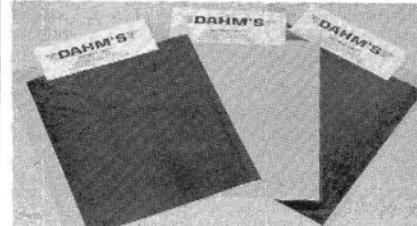
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DAHMINATE THE COMPETITION!



# Vanguard of A

by JOHN HOWELL

**"HEY,** IS THAT box for me?" I yelled.

"Forget it, Doogie," Frank retaliated.

We were fighting over the UPS box that contained the new Trinity\* Evolution 10 that had just arrived at our office. You know—the car that Joel Johnson used to capture the  $\frac{1}{10}$ -scale IFMAR Worlds title. It has also been deemed by some to be the hottest on-road car to come out in quite a while.

"Come on, Frank, I'll trade you my other road car for it," I pleaded.

"You mean the one your cousin ran over with his Mustang? That thing's hampered. I don't want it."

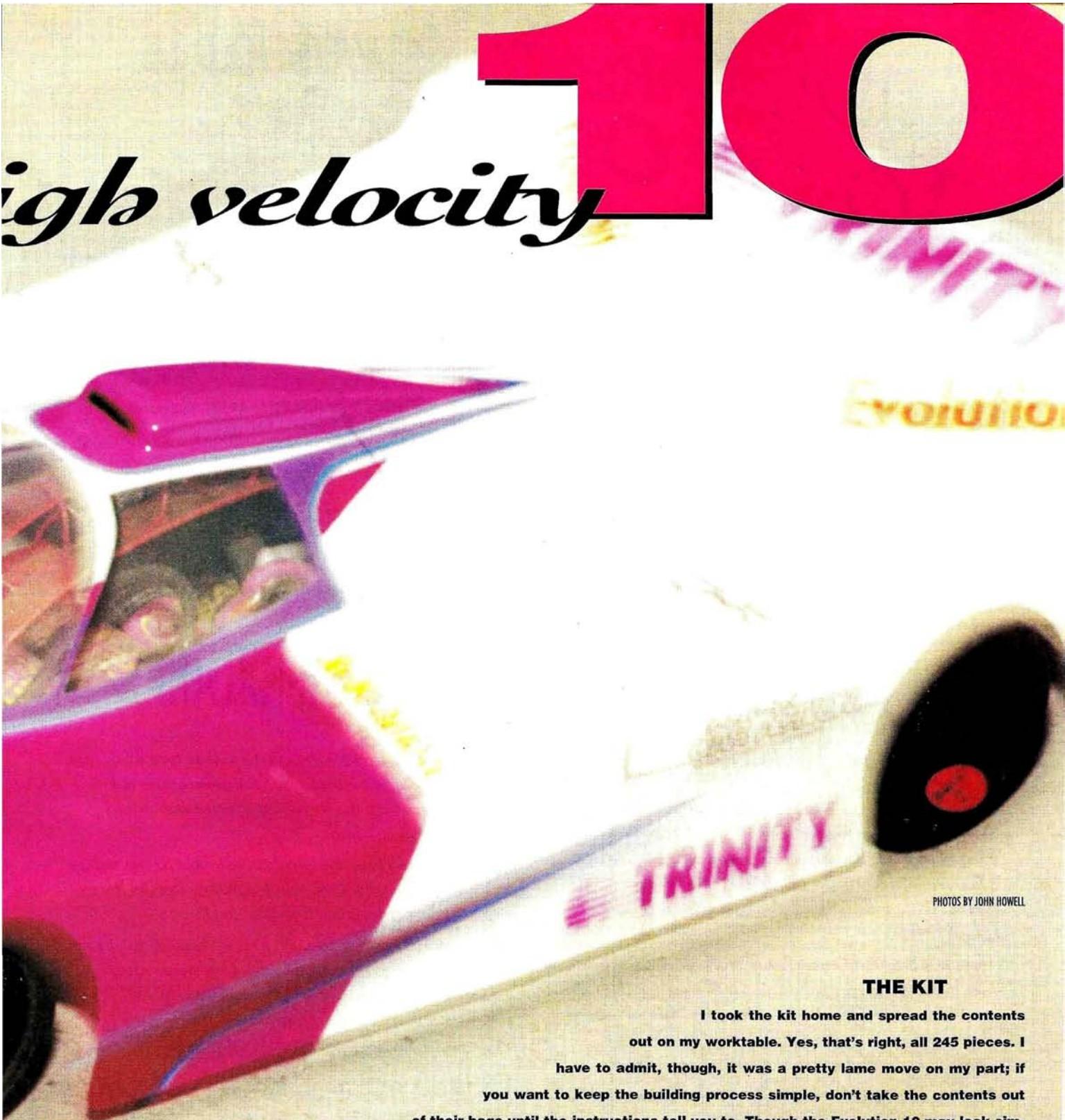
"Think of it as a challenge. Something only you could fix."

Frank pondered the idea, then said "Well, if it means that much to you, go ahead and review it. But you'd better start practicing with it, because as soon as I get one, I'm gonna smoke you on the track."

TRINITY



TRINITY  
**Evo**lution



PHOTOS BY JOHN HOWELL

## THE KIT

I took the kit home and spread the contents out on my worktable. Yes, that's right, all 245 pieces. I have to admit, though, it was a pretty lame move on my part; if you want to keep the building process simple, don't take the contents out of their bags until the instructions tell you to. Though the Evolution 10 may look simple enough to build without looking at the instructions, there are crucial tuning tips throughout the manual that help the building process go smoothly.

As I examined the contents of the kit, I realized that this car is definitely a piece of work—meaning that it's very high-tech, but at the same time, it isn't so complex that you'll be building it until 3 a.m. for weeks on end.

The best part about the Evolution 10 is that it's competitive right out of the box. You don't have to add anything to it except your radio gear, your speed controller, a 64-pitch pinion gear and your favorite motor/battery combination.

Other high-caliber features in the kit are an ultra-rigid Zero Flex .110-inch-thick

ADC graphite chassis; a Reactive Caster front suspension; a MonoSphere rear suspension with Triad damping; a light, hollow, graphite rear axle; a 64-pitch Magic Spur gear with a ball-bearing pro diff; a machined, billet-aluminum motor mount and rear hubs; mounted and trued TRC Pro-Cut ZR-1 natural rubber front and rear tires; and Class 7 ball bearings throughout.

Another of the Evolution 10's hot features is Trinity's Low Polar Movement battery-mounting system, which enables you to choose to mount your six cells either in stick packs or side packs. If you run the batteries inline down the middle of the chassis, there's less lateral weight transference, and this enables the car to change direction much more quickly without getting "squirrely."

The Evolution 10's suspension is unique. In the rear of the car, the pod is attached with a single pivot and is damped by Trinity's Triad three-dimensional shock system. The Triad setup consists of three small Delta-type shocks mounted to the rear pod and to a graphite plate that rests directly above the rear of the chassis. The battery pack slides between that plate and the chassis.

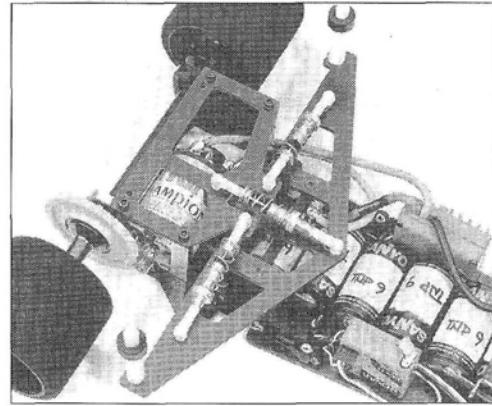
Up front, Trinity's Reactive Caster suspension-system design has a fixed carbon-graphite lower arm and upper A-arms with fully adjustable upper links to allow infinite adjustments of caster, camber, damping and roll center. The design can also be set to allow the caster to decrease as the car enters a turn, and this improves front-end traction and stability as the car exits the turn.

So now that you know what's included in

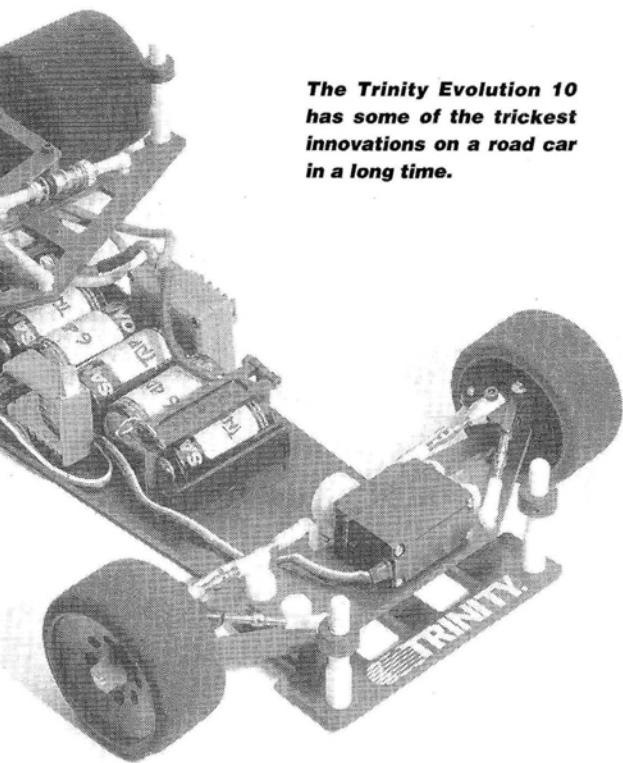
thing to catch the graphite dust, then wash your hands and the car's chassis.) A hot tip from the factory: apply superglue to the edges of the chassis so the graphite layers don't split apart and separate.

Next, slide the front kingpins through the front axle plate; once they're through, you should be able to move them easily. It's cru-

**The Trinity Evolution 10 has some of the trickiest innovations on a road car in a long time.**



**Three Delta-type shocks provide the damping for the rear pod. A Magic Motorsports spur gear is coupled to a ball-bearing pro diff. The light, hollow graphite rear axle is one of the many "ultra-sano" items that keeps the car's weight down.**



the kit, let's build it!

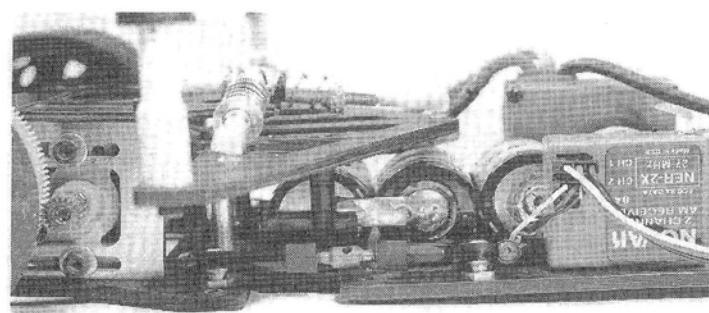
#### A LITTLE TIME AND EFFORT

First, assemble the front end.

You may have to sand lightly around the sharp edges of both the chassis and the front-end graphite piece. (If you do, spread out some-

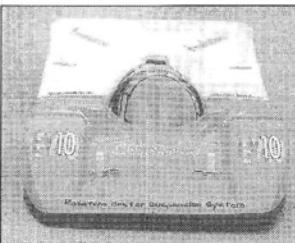
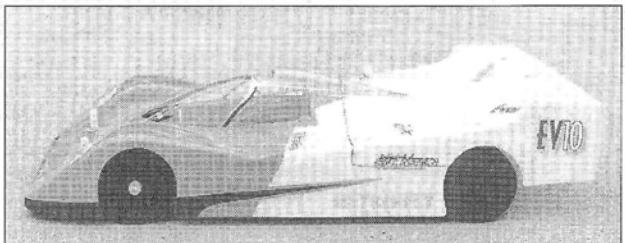
cial that they move freely; if they don't, you won't have the best suspension action.

For different degrees of damping, you can vary the type of lubrication on the front kingpins. Jim Dieter, the car's designer, recommends that you use Teflon grease for light damping; silicone lubricant for medium damping (included in the kit); and—if you can find it—Losi's original diff grease (often referred to as "grape jelly") for the most damping.



**The rear pod is attached by a single rear pivot and two trailing links. To provide better steering and cornering, the batteries run in-line down the center of the chassis.**

Assembling the front end is fairly simple, but you really have to pay attention to detail. Next to building the three rear shocks, it's the most time-consuming thing about building this car.



## TRINITY EVOLUTION 10

Scale ..... 1/10  
 Price ..... \$349.99

### DIMENSIONS:

Overall length ..... 13 inches  
 Width ..... 9.25 inches  
 Wheelbase ..... 10.25 inches  
 Front track ..... 7.125 inches  
 Rear track ..... 7.25 inches

### WEIGHT:

Gross (with battery) ... 2 pounds, 8.34 ounces

### CHASSIS:

Type ..... Plate  
 Material ..... Graphite

### DRIVE TRAIN:

Type ..... Direct drive  
 Primary ..... Pinion/spur  
 Differential ..... Ball  
 Bearings/Bushings ..... Class 7 ball bearings

### SUSPENSION:

Front: Type ..... Reactive Caster Suspension  
 Damping ..... Floating kingpin/coil springs  
 Rear: Type ..... Triad 3-dimensional damping  
 Damping ..... Three Delta-type shocks

### WHEELS:

Front: Type ..... TRC  
 Dimensions (DxW) ..... 1.75x1.125 inches  
 Rear: Type ..... TRC  
 Dimensions (DxW) ..... 1.75x2 inches

### TIRES:

Front/Rear ..... TRC Pro-Cut ZR1

### ELECTRICS:

Motor/Battery/Speed controller ..... \*

### OPTIONS TESTED:

Trinity Championship modified motor and  
 Pushed Sanyo cells, Novak 410-M1 ESC and  
 NER-2X receiver.

### HITS

- "Worldly" winning reputation
- Great cornering ability
- The front and rear suspensions offer more tuning versatility than nearly any other on-road car
- Competitive out of the box

### MISSES

- Fine-tuning the car is somewhat technical
- The complexity of the car may be more than most beginners can handle
- The instruction manual is confusing in some areas and could be visually beefed up.

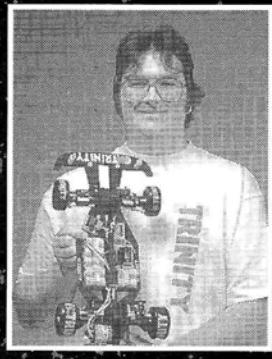
\* not included

After you've assembled the front end, start working on the chassis. Your first task is to locate the aluminum pivot ball so you can start to build the rear pod. It's simple, and once you have the rear of the car built, the rest of it goes together quickly. All you have to do is add the battery-cup holder and install the antenna mount, and the rear pod goes on.

Building the shocks will take a lot of your attention, so don't rush through the next steps. Here are a few tips for when you build them:

1. When you start to work on your shocks, empty the contents of the bag into a shoebox or some other container. There are many little pieces that could be lost on a workbench, or in your carpet, so keep them contained.
2. Don't forget to put a drop of oil on the shock shaft and on the silicone O-ring before you slide it onto the shaft. If you don't, you could unwittingly damage the O-ring, and shock performance will suffer.
3. Only fill the shock (with the recommended oil) to the bottom of the threads in the shock body. Any more, and you'll just make a mess when it's time to bleed the shock.
4. Carefully remove any flashing from the cylinder nut; if there is any, it won't let the shock shaft slide freely.
5. Last but not least, keep a rag nearby to wipe up any oil spills. When I was working on my shocks, my stupid phone rang, and I was a total buffoon, and I didn't have anything around at the time to clean up my hands, so I got oil all over my phone. It ended up being some idiot named Harold wanting to sell me the lame local paper. I wanted to rip out his throat.

# THE MAN, THE MYTH, THE DESIGNER



**J**im Dieter's name may not be familiar to you, but his R/C background goes way back. Among the many R/C gadgets Jim has designed in his Joliet, IL, machine shop is the IFMAR Worlds-winning Evolution 10.

"I first got into R/C cars in 1980," Jim recalls. "I was wrenching on midget race cars with my Uncle Danny, and

one of our drivers, Richie Vogler, had a Tamiya Rough Rider. I had to get one so we could race against each other."

Soon after Jim got his Rough Rider, he started to race 1/12-scale cars, and his first really big race was at the Cleveland Indoor Champs in '82. "I ended up third, but I should have done better. I got

hung up trying to pass someone ahead of me and I hit the wall. I wasn't concentrating, and I almost caught up to him at the finish, but then I ran out of time, and the race was over."

In '83 and '84, Jim started racing Delta Eagle gas cars, and toward the end of '84, he started to race off-road. "I raced off-road until the end of

### DIFF ACTION

After you build the rear shocks and snap them into place, build the diff. A Magic Motorsports 120-tooth spur gear is included in the kit—a nice touch. After you build the diff, put in the axle, adjust the diff and add the front and rear wheels. Now, take a step back and admire your handiwork.

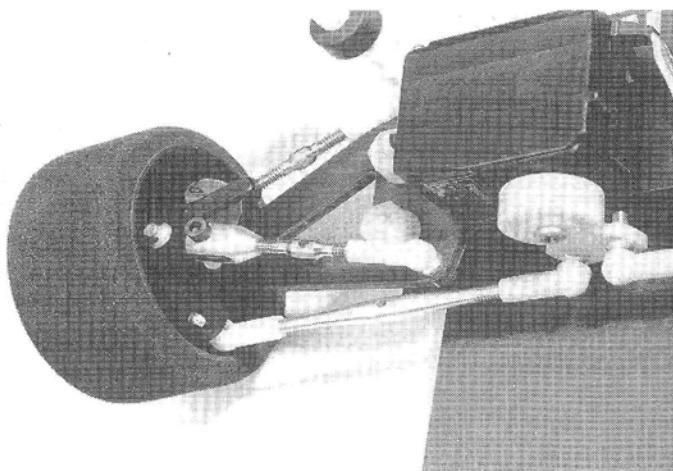
When I completed my car, I called Joel Johnson and asked him a few questions about it.

"Hey, Joel, tell me a little about your Evolution 10."

"Well, it has four wheels, and it kicks @#\$\$!"

"Be serious man; I need some quotes for the Track Report."

"It's the best car I've ever raced. With the in-line battery mounting system, the car switches directions quickly, and installing the battery is much easier with this car, too. The front and rear suspensions are very easy to adjust, and they work together perfectly."



**Trinity's Reactive Caster Suspension has a graphite lower arm and fully adjustable upper links that allow for adjustments of caster, camber, damping, spring rate/tension and roll center.**

"OK, what else?"

"Well, I won the Worlds with it."

'Nuff said.

### TRACK TIME

I charged a few packs, mounted the body on the car, and hit the road in front of my house. It took me a while to get the car dialed-in, but when I did, I called Frank for a little test session at an indoor carpet track.

We took turns driving the Evolution 10. Thanks to the battery-mounting style, we could plant the car in the corners harder and faster than any of the other cars we ran against. A crowd of eager onlookers grew with every lap we took. Everyone wanted to sneak a peek at the "mystery car." The car drove supersmooth and handled high-speed cornering better than we had anticipated. So what does this mean? Let's put it this way: you don't have to slow down as much for turns, which enables you to run faster laps, which then, you hope, adds up to more wins for you.

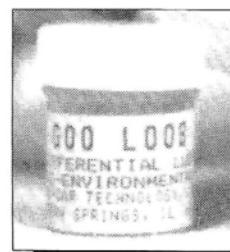
This car, with its myriad fine-tuning options, is intended for serious racers. It may be a little technical for beginners, but advanced racers will love it. It really is incredible; both Frank and I fought over taking turns driving it. And, as Joel said, it is the world champ.

\*Here's the address of the company that's featured in this article:

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036.

## AERO-CAR TECHNOLOGY

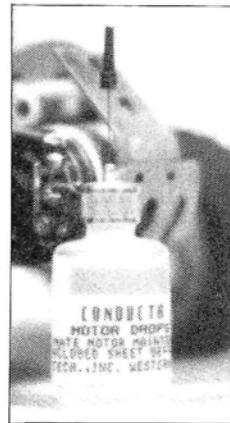
### GREAT NEW PRODUCTS



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A new concept in ball diff lubrication. Adds hours of life to your diff. Ultimate lubricity with the right amount of tack.

*Build it. Lube it. Set it. Forget it.*



#### CONDUCTA AC-3003

The last word in electric motor maintenance. Cleans, lubes and restores coms and brushes. Reduces amp draw by 25%. Improves current flow.

*For more information, contact:*

**Aero-Car Technology Inc.**  
P.O. Box 336  
Western Springs, IL 60558  
(708) 246-9027

"'90. In that time, I've raced for a lot of people, like Kyosho and Schumacher," he said.

Jim's biggest wins include the '87 ROAR Nats 4WD Modified class, the '87 NORRCA 2WD and 4WD Nats and the '88 NORRCA 2WD Nats, as well as his share of regionals here and there.

In '89, Jim got into dirt-oval racing, and that's where he had the idea for Trinity's popular oval car, the ReFlex 10. Since then, Jim has been busy at Trinity coming up with truly innovative cars. Recently, Joel Johnson TQ'd with one of

Dieter's prototype 1/2-scale cars (the soon-to-be Evolution 12) at this year's Cleveland race. That car, as well as a superspeedway version of the Evolution 10, should be available soon.

"For right now, I concentrate on being Joel's 'mechanic,'" Jim asserted. "He tells me what the car needs and how it needs to be adjusted, and then it's done. Joel's a great guy to work with, and he's really focused when it comes to driving. We're out there to win, and so far, we've been putting on quite a show."

## For ALL Your RC Needs...

- RC Cars, Parts & Accessories
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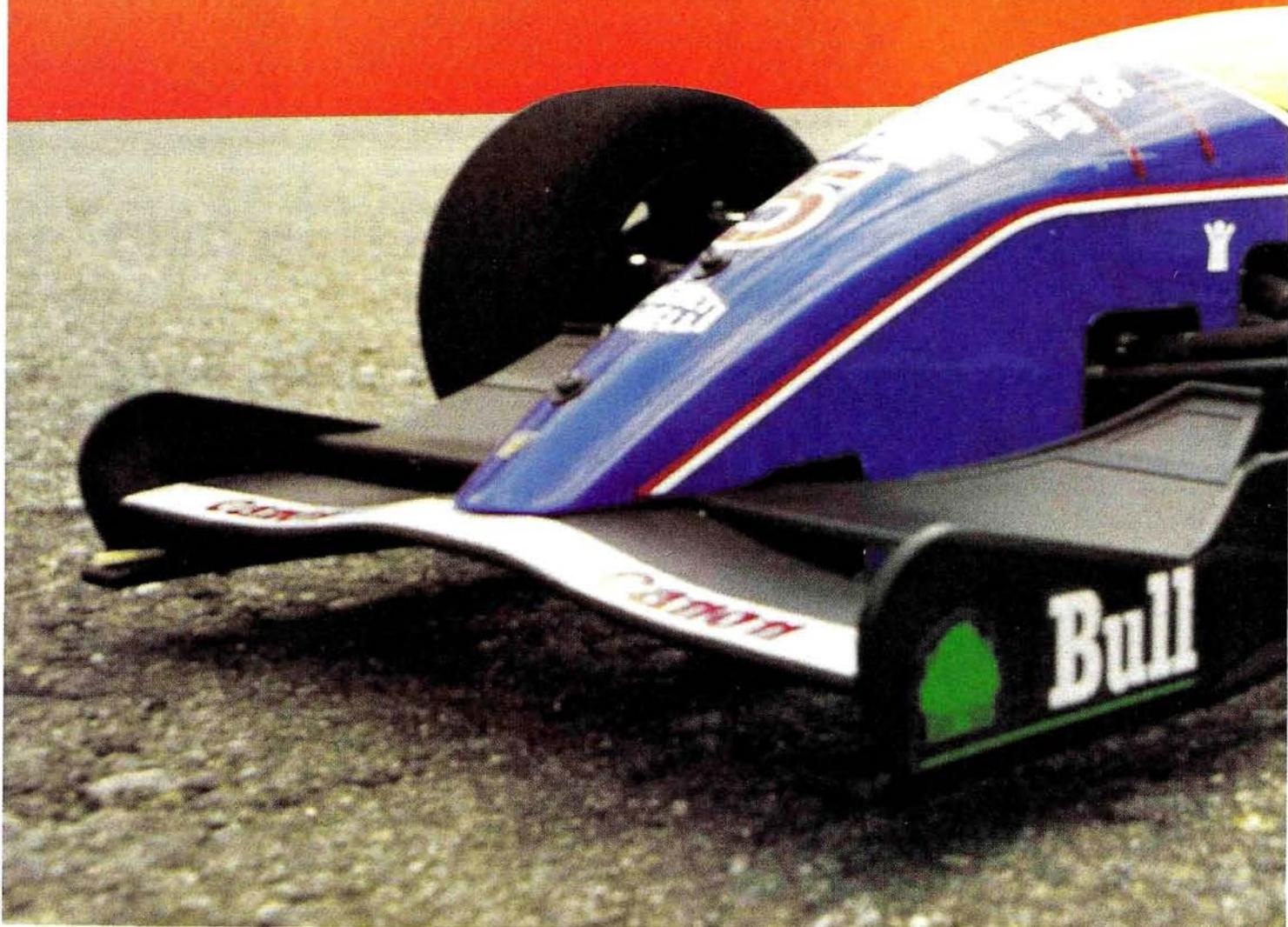




KYOSHO

# Williams Renault F1

by STAN VanDRUFF



**H**igh-performance Formula 1 (F1) cars like the Williams Renault FW14 are designed for one thing—the Grand Prix. Held on roadcourses or closed highways, the Grand Prix is the most popular auto race in the world.

Formula 1 has always been important in Europe, but it's becoming wildly

popular in Japan as well. This Japanese enthusiasm has brought us a flurry of F1 R/C products. Ever since I saw a "semi-scale" F1 car (about two years ago), I've been dying to have one. I'm glad I waited though, because the Kyosho\*  $\frac{1}{8}$ -scale Williams Renault FW14 is like nothing I've seen in  $\frac{1}{10}$  scale.

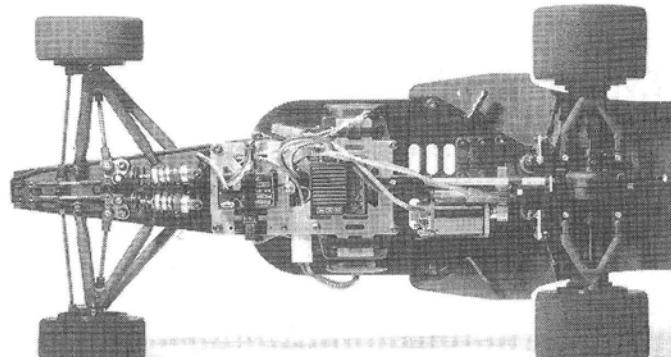
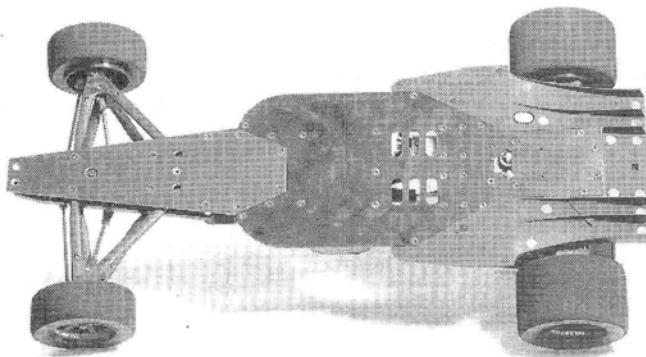
If you like a detailed car, you'll love the Kyosho kit.

The finished four-color body has about 85 decals—from the big Canon and Renault logos to tiny disk-brake coolers on the simulated 4W disk brakes that show through the wheels.

An inspection of the cockpit reveals a pair of real mirrors, a steering wheel and a set of gauges and lights on the dashboard. The driver is strapped in with a bright orange harness, and you can tilt his visor up to give him a little fresh air.



## Grand style Grand Prix!



**Above left:** the main chassis is two-piece; the fiberglass front end can be replaced if it's damaged in a crash. To the rear is the plastic ground-effects plate that "smooths out" turbulent air as it flows under the chassis. **Above right:** without its body, the FW14 reminds one of a hairless cat. The chassis has room for a .12 glow engine or twin electric motors.

#### UNDER THE HOOD

The rear portion of the main chassis plate is aluminum, but the front half is fiberglass. Plastic and aluminum plates and an aluminum tube connect above the main chassis to make a surprisingly stiff, two-tiered, 18-inch-long assembly.

The front and rear suspensions have steel-reinforced-plastic double wishbones. The lower front wishbone is spring-mounted—like a servo-saver—so it can absorb the shock of a front-end crash. All four corners have threaded travel limiters that you can use to adjust the ride height.

The kit comes with a Kyosho Mega 22-turn Outlaw stock motor—probably one of the strongest motors you'll find in a kit. It's fast enough to be a lot of fun, and it still gives plenty of run time. If you prefer twin motors, the chassis has been drilled to allow a second motor mount. There's even room for an 8.4V stick pack.

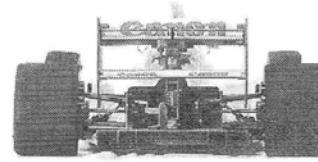
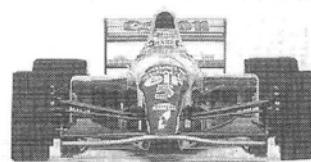
#### ASSEMBLY

Kyosho offers a gas-powered Ferrari F1 on the same chassis as the Renault. Surprisingly, building the electric Renault is more complicated than building the gas model. You have to assemble the entire drive train, including the gearbox (the diff comes assembled). The Renault requires a four-color paint scheme (the Ferrari is solid red) and it has many more decals than the Ferrari does.

The instructions are superb—the norm for a Kyosho kit. The two manuals (29 pages total) include a complete parts list, an exploded drawing of the entire car and full-size drawings of all the tricky parts (screws, ball joints and the like).

Assembly starts with the shocks and the front suspension. I had never seen the mechanics of an F1 car before I built the FW14, and the front suspension confused me at first. Coil-over shocks are mounted inboard under the nose, and each is connected to the lower wish-

#### KYOSHO WILLIAMS RENAULT FW14



Type .....	Formula 1
Scale .....	1/8
Price .....	\$499.95

#### DIMENSIONS:

Overall length .....	21.25 inches
Width .....	11 inches
Wheelbase .....	14.25 inches
Front track .....	9.25 inches
Rear track .....	8.75 inches

#### WEIGHT:

Gross (with battery) ..4 pounds, 3 ounces

#### BODY:

Type .....	Williams Renault FW14
Material .....	Polycarbonate

#### CHASSIS:

Type .....	Two-piece plate
Material .....	Fiberglass and aluminum

#### DRIVE TRAIN:

Primary .....	Pinion/spur
---------------	-------------

#### HITS

- This may just be the most exciting and challenging electric kit available.
- The finely detailed chassis and body could be a highlight of any display case.
- Superb scale-like handling will keep it off the shelf and on the road.

#### MISSES

- This kind of detail is expensive.
- Its complexity puts it out of the reach of beginners.



# What is GRAND PRIX

Modern international racing really began in 1901, when newspaper owner Gordon Bennett offered a trophy for an annual race. National auto clubs each raced three cars that had been built in their respective countries. By 1906, the French had tired of being limited to only three cars, and they boycotted the Bennett Trophy Race. That year, they held the first French Grand Prix at Le Mans.

Grand Prix races are for open-wheeled, single-seater cars, and they're run on closed highways or road-courses. Grand Prix racing became a world favorite in the '50s, when world championships for drivers and manufacturers were established. Each nation's cars were painted one color so that they could be identified easily—white (Germany); red (Italy); blue (France); and green (Britain).

Today, "Grand Prix" applies only to those races of the World Championship of Drivers (Formula 1), but the term is often used for lesser events. More than 15 Grand Prix races are held annually in countries throughout the world.

bone through a rocker plate and a pushrod. Throw in spring-loaded lower wishbones and a U-shaped anti-roll torsion bar, and you have a real headscratcher.

The instructions were perfectly clear, so I followed the steps slowly, and it went together beautifully. Be careful though; there's a lot of information in a small space. Study each step, and pay particular attention to left/right and top/bottom markings.

You have to assemble the ball ends yourself, so make sure that you push the ball in on the side marked with a little "o." Also be sure to line up the ends as shown in the instructions; this will be important later.

Next, assemble the chassis upper deck and

the receiver and battery are held down with large wire ties. I installed the speed controller with adhesive-backed Velcro. Beside the receiver is a cutout in which the on/off switch fits perfectly.

The rear suspension is similar to the front, so once you've tackled the front, the rear is a breeze.

## BODY

**DETAILING THE BODY AND THE DRIVER IS NO SMALL CHALLENGE...DON'T FORGET THE DRIVER'S HELMET, THE MIRRORS AND THE STEERING WHEEL.**

Detailing the body and the driver is no small challenge; I spent just as long working on the body and wings as I did on the chassis. There's enough work involved to warrant a separate body manual. You have two options for finishing the body; you can detail it as Nigel Mansell's number 5 or Riccardo Patrese's number 6.

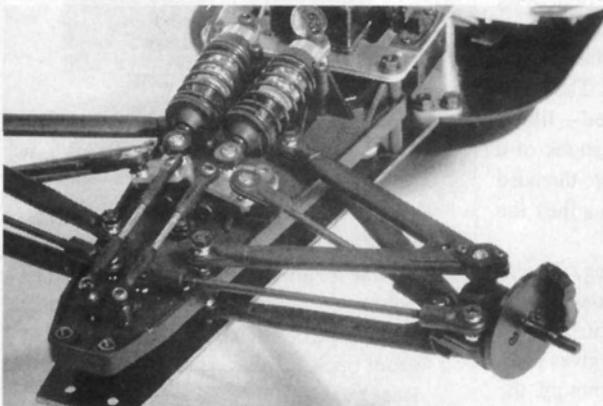
The instructions include an accurate depiction of the color scheme (although there aren't color photos), and the body has molded-in lines to indicate where the colors change. To save you some work, the body and the cockpit have been covered with a clear masking film. The good-looking pinstripes are actually decals that have been curved to fit the body. The kit includes decals for all the black parts, but I decided to paint them myself.

I usually spray a final coat of white or other light-colored paint over the inside of the body to give the job a finished look, but this time, I sprayed a black coat because you can see it through the air intake over the driver's head. If you plan to do this, remember to spray extra coats of the white and yellow first, or the black will darken these light colors.

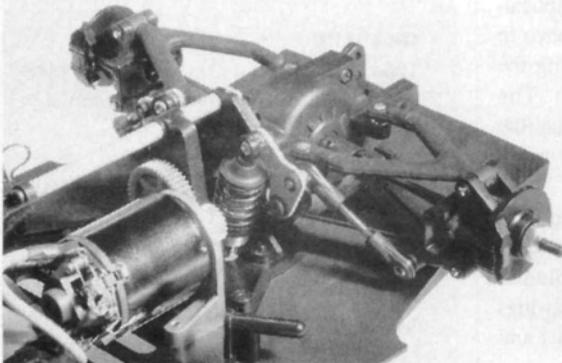
The decals come on two large sheets. If you want them to look really sharp, cut the decals as close to their lines as you can. For the wing decals, alignment is critical, and you have to cut on the line for them to fit. Check the fit before you remove the backing.

Don't forget the driver's helmet, the mirrors and the steering wheel. Model-car paint is

(Continued on page 118)

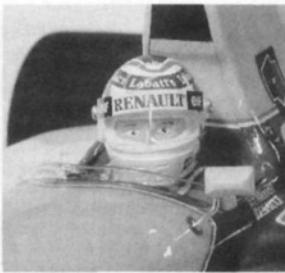


**This suspension setup is very much like that of a full-size F1 car. The wishbones are reinforced with steel wire, and they have chromed ball ends for smooth action. The suspension arm is connected to the shock through a pushrod and a rocker plate. Rods that run from the rocker plates to front of the chassis connect both shocks through a U-shaped torsion bar (not shown).**



**The rear suspension works just like the front does. Kyosho has even managed to make the differential look scale. Fake disk brakes are nice touches, too.**

add the electronics. My Futaba\* electronics fit beautifully. The servo is attached to mounts that are sandwiched between the chassis plates, and



**DETAILING THE BODY AND THE DRIVER IS NO SMALL CHALLENGE...DON'T FORGET THE DRIVER'S HELMET, THE MIRRORS AND THE STEERING WHEEL.**

## GAS ENGINE SPECIAL



# NITRO Buyers' Guide

**Nitro-powered platypus pocket protectors are... oh, sorry, wrong intro. Let's start again, shall we? Nitro-powered R/C buggies and trucks are extremely popular nowadays. We've been getting tons of mail from people all over the world who have caught combustion fever. Many companies are also jumping on the nitro bandwagon and supplying the masses with some of the most innovative machinery that we've ever seen. To assist you in your search for the ultimate nitro goodies, we've compiled a buyers' guide to the latest and hottest vehicles and accessories.**



### A-MAIN RACING LX-T and RC10T Gas Kits

Get into gas racing with the race-proven suspension and handling of the the RC10T and LX-T. To convert the LX-T with this kit, you'll also need an O.S. CZ-R engine and muffler and the Associated Stealth transmission. To convert your RC10T, you'll need an O.S. CZ-R engine and muffler.

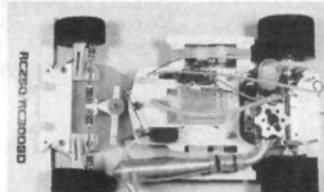
Part nos. DR2000 (RC10T); DR3000 (LX-T).

Prices: \$165; \$195.



### ARROWS World Championship Tires

The high speeds and long run times of 1/8-scale gas cars place a tremendous demand on tires. Arrows premium-grade tires are always ready to meet the challenge! They have proven their quality and durability with world, national and regional victories, and they're available in many different hardnesses and textures.



### ASSOCIATED ELECTRICS 1/8-Scale RC250 Club Racer

The Club Racer II kit includes disk brakes, a fiberglass chassis, an aluminum rear pod with machined bearing blocks, an 8mm hardened-steel axle, a ball-joint linkage and durable nylon front-suspension arms. All parts are interchangeable with the RC300's and this car can be easily upgraded to an RC300-BD.

Part no. P2001  
Price: \$99

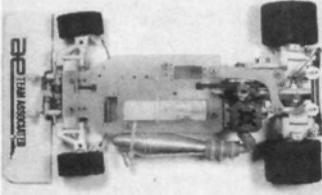


### ASSOCIATED ELECTRICS Picco Genesis 1/8-Scale Race Car Kit

The new Picco Genesis car is built tough. Other European cars that have many plastic parts become deformed by heat and racing conditions. But with this car's parts, the critical camber, caster, toe-in and ride-height adjustments won't change. Comes with special Picco P engine, manifold and muffler.

Part no. P1000  
Price: \$1,150

# NITRO Buyers' Guide



## ASSOCIATED ELECTRICS RC500 4WD 1/8-Scale Kit

The RC500 4WD car won the '87 IFMAR World Championships, the '87, '88 and '90 Nationals and the '87, '88 and '89 Winternationals. A 2-speed transmission kit (no. 5500) is available now. Get the RC500 4WD conversion kit (no. 5515) to convert your RC500 2WD car into an RC500 4WD racer.

Part no. 5002  
Price: \$625

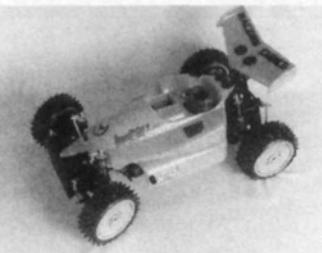


## BMT

### 1/8-Scale On-Road Gas Car

This 2WD, 2-speed race car has all the adjustments you want—caster, camber, toe-in/out and ride height—and about 80 percent parts compatibility with the 1/8-scale World Champion BMT on-road cars—a big advantage for racers who race in both gas-car classes.

Price: \$495

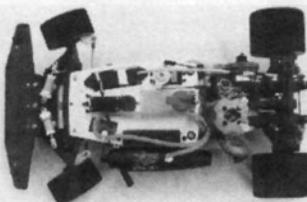


## BMT

### 1/8-Scale Gas Cars

You'll have a gas with BMT's new nitro-powered off-road cars. BMT has designed three different 1/8-scale buggies, all with many of the features of their world championship on-road cars. For serious racers, there's the hot 911S 4WD competition buggy and the 2WD 912. And just for fun, there's the new 913 2WD kit, which includes a Nova Rossi .21 engine and a "Quick Start" system.

Part nos. BMT-911S; BMT-912; BMT-913.  
Prices: \$850; \$495; \$695.



## BMT 891 Blitz 4WD Gas Cars

The 1/8-scale BMT 891's successes include world, national, regional and local championships. Why? Because BMT gas cars are race-ready!

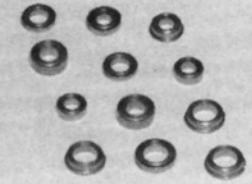
Part nos. BMT-891 (2-speed); BMT-891A (3-speed); BMT-891ACs (3-speed special).

Prices: \$775; \$850; \$995.



## BOCA BEARING Ultra-Seal Bearing

Boca Bearing offers Ultra-Seal bearings for 1/8- and 1/10-scale gas-powered cars and trucks in all the most popular U.S. standard and metric sizes. Ultra-Seal bearings are virtually frictionless for increased performance. They're sealed, so they never need lubrication, and they never suffer from dirt and grease buildup.



## BOCA BEARING Rubber-Sealed Bearings

Boca Bearing has a selection of rubber-sealed wheel bearings for gas-powered cars and trucks. These bearings require virtually no maintenance and are ideal high-performance replacements for standard bearings. Rubber-sealed bearings are available for BMT, OFNA, Inferno, Burns, USA 1 and Serpent cars, and for many other popular models.



## BRAT .21 Racing Engines

Racing with .21 engines can be expensive. If you aren't quite ready to invest in high-quality, high-cost, European-made powerplants, the answer is a Brat! It boasts

uncompromising quality, good performance and a competitive price. Designed according to the specs of some of the best European engines, the Brat is a winner twice: at the racetrack and in your wallet!

Part no. MP7040RSCP

Price: \$199.95



## DAHM'S Commando XL8

This 1/8-scale stadium race truck body fits the Inferno, Burns, Pirate, Mugen Super Sport, BMT 911S and many others. The Commando XL8 shown here is finished like a Nissan but it can easily be finished to look like a Toyota, a Chevy, a Ford, or a Dodge! Turn your 1/8-scale off-road car into an exciting stadium race truck. Mounting instructions are included.

Part no. D057

Price: \$22.98



## DAHM'S Firecat

The 1/8-scale Firecat Dune Buggy Body fits the Inferno, the Pirate, and most other 1/8-scale off-road cars. It's made of .040 G.E. Lexan and features aerodynamic side pods, a wraparound windshield, an escape hatch, front shock tower reinforcements, a rear spoiler and a racing wing.

Part no. D055

Price: \$22.98

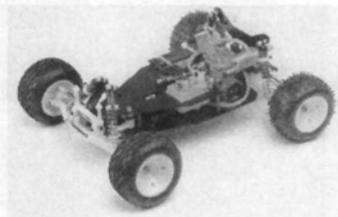


## DAHM'S Commando XL

Dahm's 1/10-scale Commando XL fits very low on the Outlaw Rampage, the Nitro Hawk and the DuraTrax RC10T and LX-T gas conversions. This body is made of light, strong .030 G.E. Lexan. It has super-aerodynamic styling, a hood scoop, a rear spoiler with mounting bolts, rear vents, rear scoops and number plates.

Part no. D198

Price: \$19.98



## DURATRAX

### RC10T Gas Conversion Kit

Convert your RC10T into a nitro-burning screamer. Kits include a heavy-duty anodized T-6 aluminum chassis, an "open ladder" chain-drive transmission, a shock tower, a fuel tank, a top plate and transmission/clutch bearings. Available with or without an O.S. .12 CZ-R engine with a recoil starter, a slide-valve carb and a high-performance mini pipe.

Part nos. DTXC0900 (with engine); DTXC0905 (without engine).

Prices: \$349.95; \$249.95.



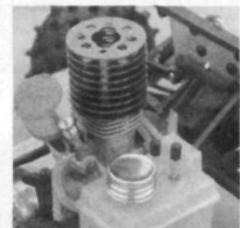
## DURATRAX

### LX-T Gas Conversion Kit

Convert your LX-T to gas power simply and affordably. Use the suspension components from your truck; DuraTrax provides you with a race-engineered chassis, top plate, tranny, fuel tank and accessories. Available with or without an O.S. .12 CZ-R with a recoil starter, a slide-valve carb and a high-performance mini pipe.

Part nos. DTXC0910 (with engine); DTXC0915 (without engine).

Prices: \$369.95; \$269.95.



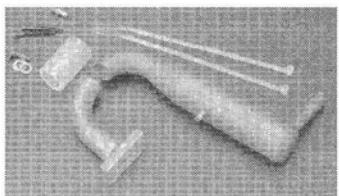
## DURATRAX

### .12 CZ-R Heat Sink Head

The CZ-R heat-sink head provides 20 percent more surface area than the original O.S. head. The increased cooling efficiency of the blue-anodized DuraTrax head allows your engine to run cooler, faster and longer.

Part no. DTXG1500

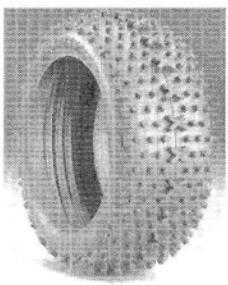
Price: \$39.95



### DURATRAX .12 CZ-R Tuned Exhaust System

Designed as a bolt-on option for the Outlaw Rampage, Thunderbird, ZR-1 Corvette and Rampage, this tuned exhaust system obtains maximum performance from the O.S. .12 CZ-R. (It's also adaptable to other cars.) Expect a quieter, faster race car. Includes all mounting hardware and instructions.

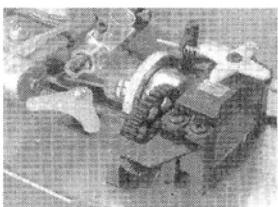
Part no. DTXG1100  
Price: \$64.95



### DURATRAX X-Dash 1/8-Scale Tires

Designed to perform well on slick, hard-packed surfaces, X-Dash tires are direct replacements for Kyosho, Mugen, Pirate and other 1/8-scale buggy tires. Quality construction and premium rubber compounds give you a balance of good grip and long wear.

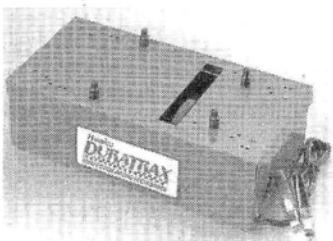
Part no. DTXC8250  
Price: \$19.95/pair



### DURATRAX .12 CZ-R Slide Valve Carb Kit

O.S. .12 owners can now enjoy the improved torque and throttle response that only a slide-valve carb can provide. The DuraTrax carb kit includes all linkage and hardware for use in the Kyosho ZR-1, the Rampage, the Thunderbird and the Outlaw Rampage.

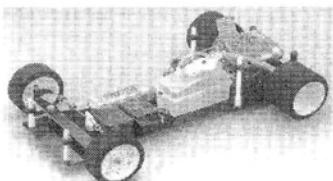
Part no. DTXG2000  
Price: \$59.95



### DURATRAX 1/8-Scale Buggy Starter Box

DuraTrax makes it easy to start your 1/8-scale buggy. This starter box includes a heavy-duty starter and only requires your 12V battery to operate. Instructions are included for easy assembly.

Part no. DTXP5000  
Price: \$99.95



### DURATRAX GT-10 2WD

The GT-10 uses many parts from 1/10-scale electrics and is available with or without a recoil-started O.S. .12 CZ-R engine and slide-valve carb. If you want the sound, smell and raw speed that only gas cars can generate, the GT-10 is your ticket for thrills on any oval or roadcourse. Requires a 2-channel radio and any 1/10 oval or GTP body.

Part nos. DTXC0800 (with engine);  
DTXC0810 (without engine).  
Prices: \$349.95; \$249.95.



### DYNAMITE Blue Thunder Car Fuel

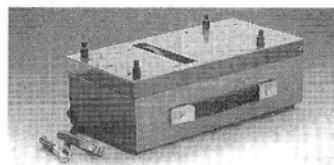
Blue Thunder has been developed to help your R/C car engine to run cleaner and maintain a more consistent temperature. Its secret is in the type and percentage of oil in the fuel. The result is a fine fuel that's available at a reasonable price. Offered in half and full gallons, from 20- to 40-percent nitro content.

Part nos. DYN2120 to DYN2240.  
Prices: \$16.95 to \$34.95.



### DYNAMITE Bearings

High-grade Dynamite bearings come in many sizes (metric and standard) and styles (Teflon-sealed, steel, etc.) to help your car achieve higher speeds, handle better and require less maintenance. They're available as packaged singles, in tubes of 20, or in complete sets for many popular gas cars (Turbo Burns, DX, Inferno, etc.).



### HORIZON HOBBY DISTRIBUTORS OFNA Universal Starter Box

Use the OFNA universal starting box to start any 1/8-scale off-road gas car. It includes an internal 12V starter with a rubber wheel. The alignment pins can be positioned to fit any car. Set the car on top, push down to hit the engine flywheel against the starter wheel and you're off and running. Made of durable, painted sheet metal, the starter box can hold a starting battery, and it comes with 12V alligator clips for external power.

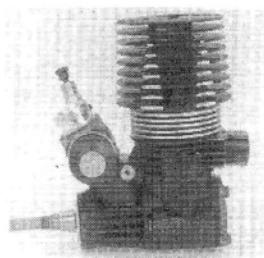
Part no. OFNSB101  
Price: \$114.95



### GLOBAL HOBBY DISTRIBUTORS Panda Pit Packs

The high-quality, heavy-duty-nylon Panda Pit Pack lets you carry all your R/C gear to the track in style. Panda Pit Packs come in a variety of radical colors with racy graphics; their cool carrying straps feel comfortable, even when the totes are full.

Price: \$34.95



### HORIZON HOBBY DISTRIBUTORS Paris Picco P-5 Modified .21

The P-5 is the state of the art in car-engine technology. It offers several power-increasing improvements, including a redesigned crankcase with extra fins to improve cooling. A new casting method yields a more accurate finished part, and the bypass and transfer channels are cut deeper into the case for increased fuel flow and power. Also refined is the exhaust, now angled downward 15 degrees to enhance fuel flow for improved scavenging.

Part no. PCOP5M  
Price: \$349.95



### GLOBAL HOBBY DISTRIBUTORS Panda Gassers

Panda Gassers are 1/10-scale, .10cid gas-powered R/C cars. The assembled chassis comes with an installed Magnum GP .10 ABC/FSR engine. Install your 2-channel radio, secure the wheels to the axles, paint the body, fuel up and go! The GP .10 engine has a built-in recoil starter and automotive-style paper-element air filters to keep dirt out of the engine.

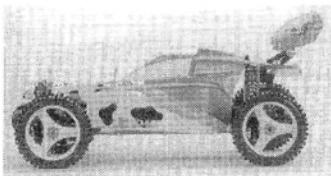
Part nos. 014700 (gas stocker);  
014900 (gas stadium racer).  
Price: \$309.95

### HORIZON HOBBY DISTRIBUTORS OFNA Pirate M-1

The M-1 has full ball bearings, a precise steering linkage with a spring-actuated servo-saver, an adjustable motor mount, a tuned pipe and high-quality machined and molded parts. It's very competitive out of the box.

Part no. OFNA14100  
Price: \$485

# NITRO Buyers' Guide



## HORIZON HOBBY DISTRIBUTORS OFNA Super Pirate M-3

The new 1/8-scale gas off-road Super Pirate M-3 is designed for serious competitors. It has a redefined drive train with steel crown gears and hardened planetary gears on all three diffs. Hard-anodized shocks, new dual brakes (with adjustable front-rear bias), a longer hard-anodized aluminum chassis for improved stability, new wheels and a tougher body and wing round out this racer.

Part no. OFN14310  
Price: \$649.95



## K&N Spray Filter Oil & Cleaner

Dirt, dust and grit will shorten an engine's life. To prevent this, use a good-quality filter and be sure to coat it with Racer's Choice K&N aerosol spray filter oil and clean the dirty filters with Racer's Choice K&N foam rubber and/or cotton-element cleaner and degreaser.

Part nos. RC7041 (service kit); RC7042 (oil spray only); RC7043 (cleaner only).

Prices: \$12.95; \$6.95; \$7.95.



## KYOSHO 1/8-Scale Inferno 4WD

Kyosho's 1/8-scale Inferno proved in 1992 that it's the best "out of the box" 1/8-scale off-road buggy. With a strong aluminum chassis and upper tray system, three diffs, full ball bearings and lightweight racing wheels, the Inferno is ready for your engine, radio and exhaust system.

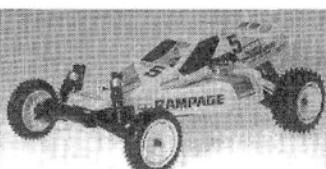
Part no. KYOC0536  
Price: \$679.95



## KYOSHO Nitro Thrasher 4WD

The mighty, recoil-started O.S. .12 CZ-R unleashes 30,000rpm. The wheels paw the turf with maximum torque drawn from a heavy-duty shaft-drive system. Metal gears in the dual diffs reduce wear and a disk brake restrains the power until you're ready to turn it loose. It rolls on 5.4x3.2-inch V-tread tires—backed by a fully independent suspension and four adjustable, oil-filled, coil-over shocks. It also has metal bushings, a rugged front bumper, an aluminum pan chassis and a detailed Ford F-250 body.

Part no. KYOC0520  
Price: \$459.95



## KYOSHO Rampage 2WD

Get the complete nitro package—a hard drivin' buggy plus the O.S. .12 CZ-R engine with fast recoil starting—in the 1/10-scale Rampage 10 2WD off-roader. The Rampage combines power with easy operation. In an instant, you'll have the O.S. engine purring. It includes a Duraluminum chassis, an enclosed gearbox, an independent suspension, oil shocks, low-profile pin spikes, a fuel tank, a muffler, a body and a glow-plug driver.

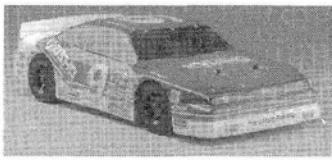
Part no. KYOC0517  
Price: \$359.95



## KYOSHO Outlaw Rampage Truck

Kyosho's gas-powered Outlaw Rampage 2WD is a jolt of exciting stadium-truck racing in 1/10 scale. The kit comes partially assembled. A fuel tank, a gearbox and a powerful O.S. .12 CZ-R ABC engine with a recoil pull start are installed. It has an independent suspension with adjustable upper arm lengths, long, adjustable, oil-filled, coil-over shocks, racing wheels and tires. Chassis and wheel dirt guards, a fuel bottle and a glow starter are also included.

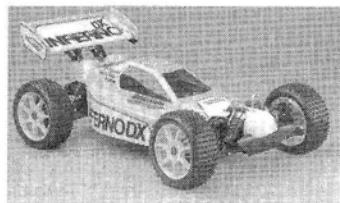
Part no. KYOC0518  
Price: \$399.95



## KYOSHO 1/10-Scale Thunderbird 2WD Stock Car

The Thunderbird oval racer is built around a tough aluminum chassis and comes with an installed enclosed gearbox, front bulkhead and recoil pull-start .12 CZ-R engine; lowered, front/rear independent suspension; oil-filled shocks; all-purpose foam tires (mounted and trued on authentic stock-car-type wheels; a flip-top fuel tank; a fuel bottle; a glow-plug wrench; and a glow starter. A polycarbonate body gives you the look and detailed decal sheets provide the finishing touches.

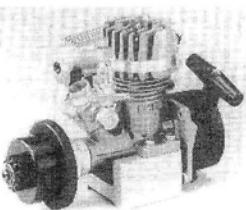
Part no. KYOC0519  
Price: \$399.95



## KYOSHO 1/8-Scale Inferno DX 4WD

Based on the world champion Inferno, Kyosho's Inferno DX is the perfect entry-level 1/8-scale gas buggy; heavy-duty coil-over black shocks, high-speed metal bushings and three diffs provide awesome performance for racers on a budget.

Part no. KYOC0533  
Price: \$429.95



## MAGNUM GP .10-BX ABC/FSR

Magnum's GP .10-BX really packs a punch for such a small engine, and it's quiet, too! It's made on ultra-modern CNC equipment for the highest possible accuracy, quality and reliability. It has a 2-year warranty. The single-needle-valve carburetor has an adjustable air-bleed idle-mixture screw for easy operation. An air cleaner and a pull-starter are included.

Part no. 213212  
Price: \$107.95



## KYOSHO Ferrari F-1 1/8-Scale 2WD

Its scale Lexan body matches the full-size car in every detail. There's no engine head in sight; a unique, shaft-driven cooling system hides the included, recoil-started O.S. .12 CZ-R engine. The pushrod/damper suspension system offers superior handling. Its front arms have a metal rod, molded into composite nylon, for scale appearance and durability. A "ground effects" chassis creates downforce at high speeds for traction and handling. Foam compound tires, a fuel bottle, a glow-plug wrench and a glow starter are all included.

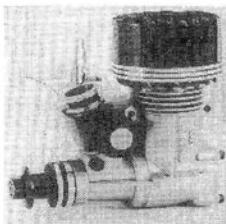
Part no. KYOC0524  
Price: \$689.95



## KYOSHO USA-1 Nitro Crusher 4WD

Topped off by the scale 1990 Chevy Silverado body and complete with chromed details, the USA-1's realism is incredible! Featured are a durable flat-pan aluminum chassis, special formula nylon double wishbones, a heavy-duty shaft-drive system adapted for 4WD, three gear-type differential units, bronze bushings, huge 6.6-inch rubber tires, and eight oil-filled shocks. A .21-size buggy engine and a 2-channel radio are required.

Part no. KYOC0525  
Price: \$479.95

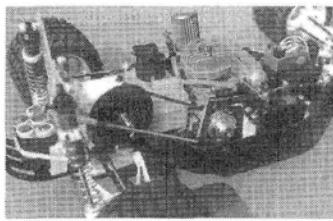


## MAGNUM Pro .21 Car Engine

This engine is made using state-of-the-art metallurgy and CNC milling machines. The result is an engine that will be your favorite 1/8-scale powerplant. The Pro .21 is backed by the famous Magnum 2-year warranty. Features: ABC construction, FSR porting, dual ball bearings, slide carburetor.

Part no. 213310  
Price: \$139.95

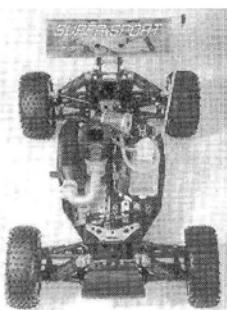
# NITRO Buyers' Guide



## MOODY AUTOMOTIVE Drive Pack

Convert your RC10 or RC10T into a fast, reliable gas-powered racer for off-road or on-road competition. You supply the O.S. CZ-R engine and spend a couple of evenings fastening parts to your chassis. For your effort, you get a gas car that uses your electric car accessories, e.g., tires and shocks, yet has the speed and excitement that only a gas engine can provide. The Drive Pack comes with parts, hardware and a full set of instructions. Accessories are available.

Price: \$95



## MUGEN Super Sport

The Super Sport has a single-shaft 4WD system with a dual disk-brake setup and steel universal-joint driveshafts. It comes with steel gears throughout, and its rugged, fully independent suspension has redesigned shock towers and new shocks with threaded aluminum bodies. It also has full ball bearings, a tough, light chassis, strengthened radio-tray posts, high-grip pin-spike tires on light nylon wheels, a rear stabilizer bar and a strong, one-piece aluminum flywheel.

Price: \$649.95

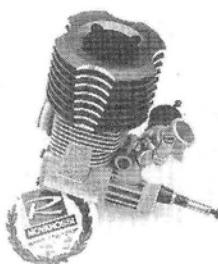


## NOVA ROSSI High Performance Racing Pipes

Nova Rossi's strong, durable no. 053 pipe will give you awesome power from

holeshots to high-speed straights. Or, check out their race-proven no. 020 pipe—perfect for smooth power on medium-sized tracks.

Part nos. 020; 053.  
Prices: \$47.50; \$54.95.

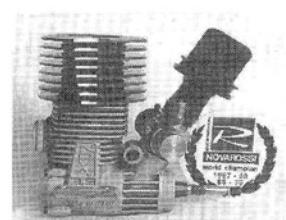


## NOVA ROSSI Nova 2000

### Performance .21 Engines

Nova Rossi offers two competitively priced, competition-designed .21 gas engines for winning results. The Nova 2000 4-port with a 55mm head is ideal for American on-road racetracks; the Nova 2000-B 6-port is specifically designed for the ultimate in off-road bottom- and top-end speed.

Part nos. NR-2000; NR-2000-B.  
Prices: \$269; \$323.



## NOVA ROSSI High Performance "Top 8+2" .21 Engines

Nova Rossi's "Top 8+2" .21 engines are fantastic and require no costly modifications. They have turbo cranks and 10 ports for unbeatable performance. The "B" model is for off-road buggies. The "S" model has selected parts, is bench-run and factory-tested and comes with a tech data card.

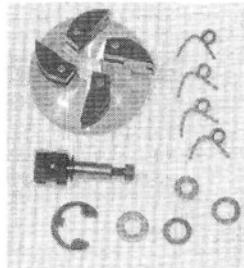
Part nos. NR-TOP; NR-TOP-B; NR-TOP-S.  
Prices: \$425; \$425; \$503.



## OFNA RACING Dual-Chamber Tuned Pipe

Used with .21 engines, this dual-chamber, blue-anodized pipe will give you better power and performance.

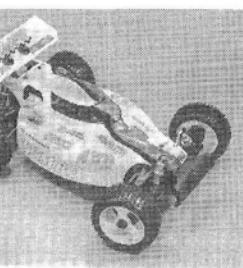
Part no. MRI-1  
Price: \$26.95



## OFNA RACING Four Shoe Clutch Kit

This high-performance kit can be ordered to fit tapered or straight-hole flywheel-type engines. It's also available for O.S. CZ-R engines. It provides excellent power and good idle with no drag at low rpm.

Part no. HN-104  
Price: \$33.95



## OFNA RACING Tempo

The Tempo is an 1/8-scale 4WD gas racer that's 80-percent-assembled, but it's also a competitive car that comes with many racing features: dual brakes, a quick-fill tank, a bearing drive train, large oil-filled hard-coated aluminum shocks, natural rubber tires, a tuned pipe, a steel bevel drive and pinion, steel differential gears, etc.

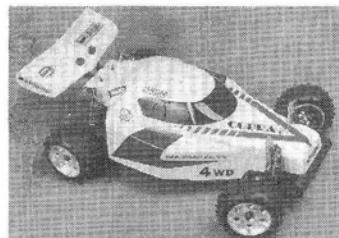
Part no. MRI-101  
Price: \$300



## OFNA RACING Large Block Spike Tires

These long-wearing tires are made of natural rubber compound in two grades—medium and hard. They have a large block spike design and work well on damp to dry tracks.

Part no. FR-3  
Price: \$16.95



## OFNA RACING Cobra Model 2

The 80-percent-assembled Cobra Model 2 is a 1/10-scale 4WD gas buggy that can be ordered with or without a pull-start .12 engine. The 4WD is powered by center-mounted shafts with a center disk-brake unit. The drive uses three diff's with steel gears. It comes with the latest A-arms and top-center chassis support, so it's super strong.

Part no. GV-100-01  
Price: \$199.95

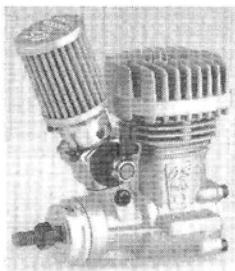


## OFNA RACING 5-Spoke Wheels

The white, dyeable nylon wheels come in two widths for front and rear. Wheels have 17mm hubs and fit Pirate, Mugen, Tempo and HODR cars.

Part nos. B-73A (front); B-74A (rear).  
Price: \$16.25

# NITRO Buyers' Guide



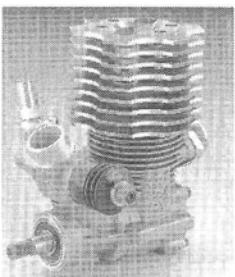
## O.S. ENGINES

### .12 CZ-R ABC Engine

Built to provide competition-class speed and endurance, the O.S. .12 CZ-R has a large-throat 2BK carb with a broad adjustment range and special automatic mixture control for rapid acceleration. Schnuerle porting, ABC construction and a large heat-sink head add to its reliable performance. It's protected by the O.S. 2-year limited warranty.

Part no. OSMG2019

Price: \$129.95



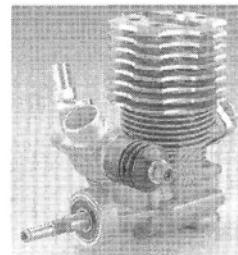
## O.S. ENGINES

### Buggy Engines

The O.S. .21 RX-B handles the rigors of off-road competition while delivering increased bottom-end torque. Its new fin shape and combustion-chamber position provide better response and stability at high speeds. It's strong and durable, and its crankcase has been treated to minimize heat strain. A new slide-valve carb improves response and reliability. The Paris/O.S. .21 RX-B includes many heat-treated parts and has special re-porting for top-end speed.

Part nos. OSMG2085, OSMG2086 (Paris).

Prices: \$359.95; \$439.95 (Paris).



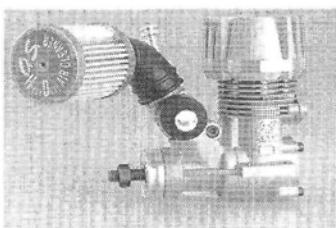
## O.S. ENGINES

### On-Road Engines

Developed for serious on-road competition, the .21 RX-R engine delivers high rpm for increased speed on the straightaways. Its crankshaft is integrated with the pilot shaft for easier maintenance. The crankcase is heat-treated to keep heat and residual strain to a minimum. The Paris/O.S. .21 RX-R includes many heat-treated parts for increased engine life, and special re-reporting for the top-end speed needed in demanding races.

Part nos. OSMG2065, OSMG2066 (Paris).

Prices: \$349.95; \$429.95 (Paris).



## O.S. ENGINES

### .21 RF-B ABC Buggy Engine

Get the most from your off-road car with this rear-exhaust .21 RF-B engine. Schnuerle porting, ABC construction, a large-bore slide-valve carb and a heat-sink head with a large cooling area provide output and dependability. The .21 RF-B is also backed by a 2-year limited warranty.

Part no. OSMG2075

Price: \$199.95



## PARIS RACING

### Yellow Jacket

This Yellow Jacket infrared temperature probe is made exclusively for Paris, and it was designed especially for use with R/C engines. This is the only unit that has microprocessor-based heat emission—a must for accurate readings. It includes a carrying case with a belt loop and a detailed tuning guide.

Price: \$295

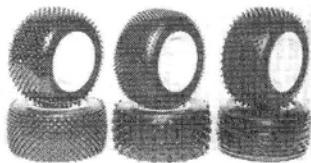


## PARIS RACING

### Picco Engine

Paris-prepared Picco engines won and TQ'd every major gas race in the USA in 1992, including the Winternationals, the Vegas Grand Prix, the Texas Biggie, the McCoy Race, the ROAR Nationals, the Paris Can Am Challenge and the Kyosho Challenge 1/8-Scale Off-Road Race.

Price: \$259.95



## PRO-LINE

### Off-Road Stadium Truck Tires

For stability and ground control on a wide variety of terrain and track conditions, these tires fit any 2.2-inch stadium-truck wheel and are available in both original XT or the new XTR compound.

Part nos. (top row, right to left): 7090 (original Mini-Pin); 7092 (Fuzzie T); 7120 (Coarse Spike). Bottom row: 8130 (Traction Plus Step-Pin); 8150 (Step-Spike); 7065 (Multi-Rib with Staggered Bars). XT Compound, 7000 series; XTR Compound, 8000 series.

Price: \$16.95



## PRO-LINE

### Off-Road Stadium Truck Bodies

Pro-Line's truck bodies are made of light, flexible Lexan and offer race-proven performance and style. The 1993 Toyota is race-ready and a direct fit for the RC10T, LX-T, Traxxas and Rampage gas-conversion trucks.

Part no. 3023

Price: \$19.95



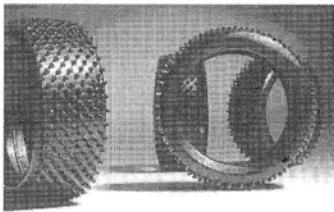
## RACER'S CHOICE

### FSR "Quick Fill" Fuel Gun

Any gas racer knows that pit stops consume precious seconds. That's why you should try Racer's Choice FSR "Quick Fill" fuel gun. Its unique design allows you to fill your tank in two seconds or less, without messy overfill and with a full tank every time.

Part no. RC7040

Price: \$85



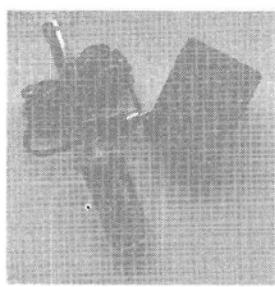
## PRO-LINE

### 1/8-Scale Tires

The spiked XT tire was used by two top drivers in the A-Main at the '92 Gas Off-Road World Challenge. It's made of an advanced lightweight racing rubber blend. It has a sharp spike combined with a diamond design and it's a direct fit for Kyosho, Pirate or Mugen narrow 1/8-scale wheels.

Part no. 9010

Price: \$19.95



## RACER'S CHOICE

### Glow Plug Starter Kit

This new, compact, high-quality Ni-Cd glow-plug starter kit includes a chrome-plated, spring-actuated starter with a rechargeable Ni-Cd battery and a 1.25V, 600mA charger with a charge-indicator light.

Part no. MP-7041

Price: \$25.50

# NITRO Buyers' Guide



## RACER'S CHOICE HySpin High-Speed Bearing Oil

HySpin is made of pure liquid Teflon. It's ideal for small, high-speed bearings. The same type of lubricant has been used in professional race cars, high-tech aircraft, missiles—even satellites!

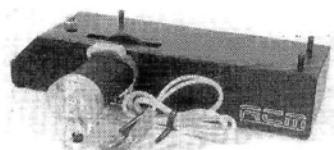
Part no. 7015  
Price: \$9.95



## RACER'S CHOICE Jet Flow Gas Car Filter

Racer's Choice offers high-quality gas-car filters, including its new "Jet Flow" design (right). The Jet Flow filter captures clean air above the body line; this keeps the filter clean and increases engine performance. The design promotes fast airflow, and it fits most carbs.

Part no. 7039  
Price: \$5.95



## RCM

**Starter Box with Motor**  
RCM's 0.062 aluminum starter box is narrow, so the car's tires won't engage it. It includes a starter motor, a heavy-duty switch, a starter wheel, alignment posts and all hardware. It's for use with most 1/8- and 1/10-scale on-road gas cars.

Part no. 3600  
Price: \$89.95



## ROBART MFG. Pure Power R/C Engine Treatment

Smooth, seal and protect vital R/C engine parts with this revolutionary new engine treatment. Pure Power R/C engine treatment protects metal from rust, corrosion, heat and frictional wear. Use it like an after-run oil; your 2- and 4-stroke engines will be cooler and more powerful in higher rpm. They'll last longer and run stronger with less maintenance.

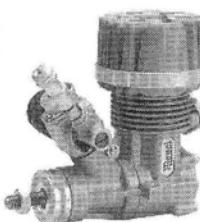
Part no. RPP-01  
Price: \$4.95/1 ounce



## ROBART MFG. Pure Power R/C Fuel Treatment

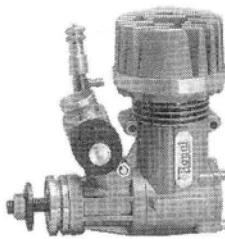
Add kick to your R/C engine fuel with Pure Power R/C fuel treatment. Mix it with any fuel to remove moisture and other fuel contaminants and enhance power. It will stabilize the fuel to provide easier starts, cleaner engine components and increased lubrication of the upper cylinder and bearing surfaces.

Part no. RPP-02  
Price: \$6.95/4 ounces



## ROYAL PRODUCTS .21 Rear-Exhaust Car Engine

This engine has ABC design, Schnuerle porting, full fuel-metered carburetion, twin ball bearings and a head design that incorporates oversized fins for optimum cooling. Price: \$134.95



## ROYAL PRODUCTS .21 Side-Exhaust Car Engine

This engine has ABC design, Schnuerle porting, full fuel-metered carburetion, twin ball bearings and a head design that incorporates oversized fins for optimum cooling.

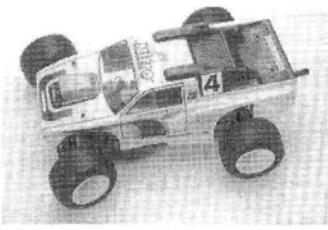
Price: \$129.95



## SCHUMACHER Nitro 10 Mk2 Truck

This 1/10-scale truck has a powerful .15ci engine with ABX and ball bearings, an onboard glow supply and a pull-starter. Spare parts are available.

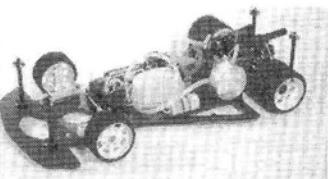
Part nos. U-434 (truck); U-433 (buggy).  
Price: \$619.95



## SCHUMACHER Nitro 4x4

The breathtaking performance of a powerful .15 engine is combined with a sophisticated 4WD chassis, so this car is astoundingly fast and it really handles. Even a novice can power-slide it with precision, on the loosest of surfaces, and then stop it on a dime with its 4W braking.

Part nos. U-447 (truck); U-446 (buggy).  
Price: \$849.95



## SCHUMACHER Nitro 10 Daytona

Schumacher's powerful Irvine .15 engine is mounted on a light, flat pan chassis that has a fully independent rear suspension. The Daytona is a racer, but with the convenience of an onboard glow supply and a pull-starter.

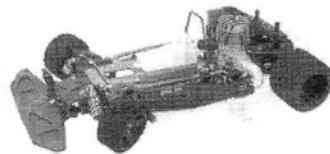
Part no. U-445  
Price: \$589.95



## SERPENT Impact

The Serpent Impact sets the standard for cars in its class. Its "true" full-suspension (front and rear) chassis makes it easy to drive and exciting to race. The Impact can be powered by a .12cc or .15cc engine, and its top speeds rival or exceed those of its electric counterparts.

Part nos. 8022 to 8051  
Prices: \$399.95 to \$650



## SERPENT Excel

Berton's totally new Serpent 1/8-scale 4WD race car has a 2-speed transmission, quick-change front and rear wheels, a rear-suspension body-mounting system and fully adjustable ball-type pivot points. Its new composite-nylon suspension parts are extremely stiff and very resistant to impact.

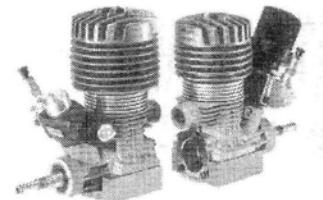
Part no. 9000  
Price: \$750



## SERPENT Mega RS .15

This is the first of a new breed of powerplants for the 1/10-scale gas-racing car class. Its features include Mega RS .15 housing, a large purple-anodized cooling head, a barrel-type 2-needle carb, a separate combustion chamber and a Serpent-type crankshaft.

Part no. 2500  
Price: \$225



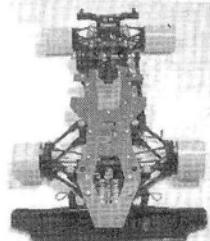
## SERPENT Mega RS .21

Made by Picco for Serpent, this is the 1/8-scale powerplant of the future. It has a large purple-anodized cooling head with a sepa-

# NITRO Buyers' Guide

rate combustion chamber, a narrow piston and liner set, new porting geometry and a 9mm slide-valve carburetor.

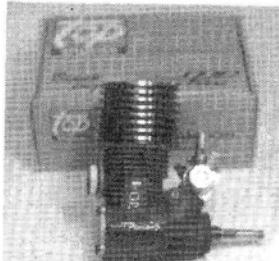
Part no. 2400  
Price: \$355



### SIGMA TRADING Parsec Sigma NC4

The Parsec Sigma NC4 1/8-scale gas on-road car is made of the highest-quality aircraft-grade aluminum. Easy to assemble, fast and extremely durable, the 1992 Canadian National Champion Parsec is a proven race winner straight out of the box!

Prices: \$850 (2-speed); \$950 (3-speed).



### SIGMA TRADING JP Racing

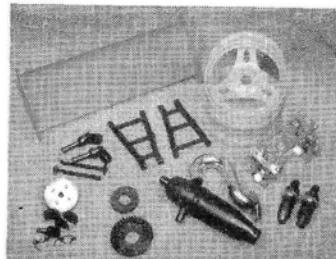
These race-proven, modified, top-of-the-line, black-anodized engines are intended for racers who require that competitive edge.

Prices: \$595 (standard); \$695 (turbo).



### SULLIVAN Race Car Adaptor & Hi-Tork Starter

The Sullivan no. 601 Hi-Tork Starter is a standard diameter 200 ounce-inch starter motor for car engines to .45. The Sullivan Race Car Adaptor is designed to reach flywheels of all popular gas-powered cars. It's made of hard, durable rubber and features a non-slip crossbar. Ask for Sullivan no. 624 for just the adaptor, or for Sullivan no. 610 for the Race Car Adaptor kit.



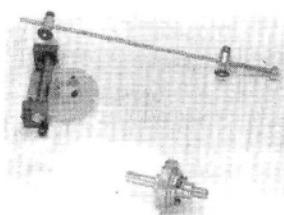
### TEAM JR After-Market Parts

Team JR carries a full line of after-market products to fit most 1/10- and 1/8-scale gas cars.



### TEAM JR Thorsen Diffs

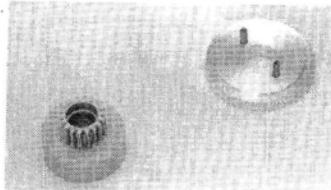
Now available from Team JR and Alpine Motor Sports, Thorsen diffs will put more power to the ground! For serious 1/8-scale gas racers only.



### THORP MFG. Brake

The Thorp disk brake is easy to install. It has a fine nut adjustment for various braking conditions. It won't bind on the bell housing (this causes the engine to stall). Fits Outlaw Rampage, Thunderbird and other similar Kyosho gas cars.

Part no. 6060  
Price: \$40



### THORP MFG. Aluminum Flywheel

Get a jump on the competition! Thorp's lightweight aluminum flywheel enables your engine to pick up rpm quickly. It fits the Traxxas Nitro Hawk.

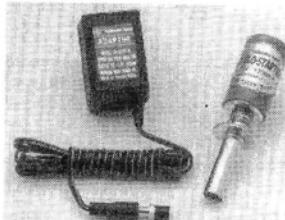
Part no. 5361  
Price: \$15



### THUNDER TIGER S-189 Golden Series Mini Servo

You can fit the S-189 into much smaller areas than standard servos; it's lighter, too! Perfect for 1/12-scale cars, the S-189 Mini Servo is available with Futaba J-connectors.

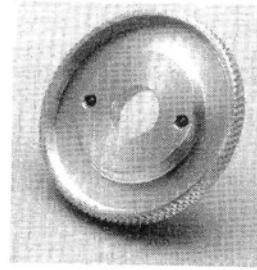
Part no. 110298  
Price: \$37.95



### THUNDER TIGER Glo-Starter and Long-Reach Glo-Starter

These portable, pocket-size starters provide up to 50 15- to 20-second starts from the fully charged, single Ni-Cd power cell. A locking glow-head tube fastens the starter to the glow plug securely; simple thumb pressure releases it quickly. The separate wall charger with an extension cable has an indicator light that lets you know when recharging is under way.

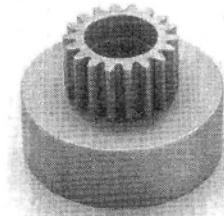
Part nos. 110480 (Glo-Starter); 110482 (Long-Reach Glo-Starter).  
Prices: \$24.95; \$28.95



### TRAXXAS Lightweight Aluminum Flywheel

This new machined-aluminum flywheel for the Traxxas Nitro Hawk weighs only 10 grams—one-third the weight of the stock steel flywheel. This significantly reduces the rotating mass of the engine, producing quicker throttle response and faster acceleration. Simple, bolt-on installation. Made in the USA.

Part no. 3143  
Price: \$15



### TRAXXAS 18-Tooth Steel Clutchbell

This hardened-steel clutchbell for the Traxxas Nitro Hawk provides a lower gear ratio than the stock 20-tooth gear. The lower gearing is better suited for tight off-road tracks. Bottom-end acceleration is significantly improved for more "punch" between the turns. It will last up to 5 times longer than the stock clutchbell. Requires two 5x10mm ball bearings (sold separately). Made in the USA.

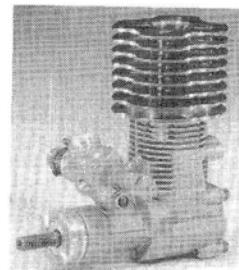
Part no. 3118  
Price: \$20



### TRAXXAS Nitro Hawk

Its high-performance .12 engine has a recoil starter, a dual ball-bearing crankshaft, an oversized heat-sink head and a connecting rod with bushings. The chassis and suspension have T-6 aluminum and nylon components with extra-long, T-6 competition oil dampers, dished wheels and turnbuckle adjustments. The transmission has a slipper clutch and a planetary-gear diff.

Part nos. 3104 (fully assembled without radio); 3110 (fully assembled with radio).  
Prices: \$495; \$595.

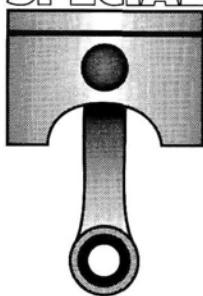


### WEBRA Speed .12 Car Engine

Webra's new powerful .12 rear-exhaust car engine includes a 2-needle slide-valve carb for precise mixture control; ABC piston and sleeve construction with real chrome plating to increase durability and performance; and a high-volume, 3-port design. A dual ball-bearing-supported crankshaft and an oversized rod add to its reliability.

Part no. WEBE120  
Price: \$169.95

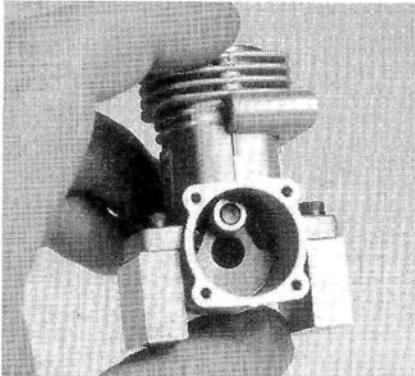
(Continued on page 172)



# ENGINE MAINTENANCE

## TWO-STROKE TWO-NUP!

**I**MAGINE FOR a moment that your 2-stroke engine is a heart. Your car's heart is continually subjected to extreme heat, dirt, grit and wear as it beats sometimes as many as 30,000 times each minute.



**With the backplate cover removed, inspect the interior of the engine for scratches, pits, discoloration, or small metal flakes or filings.**

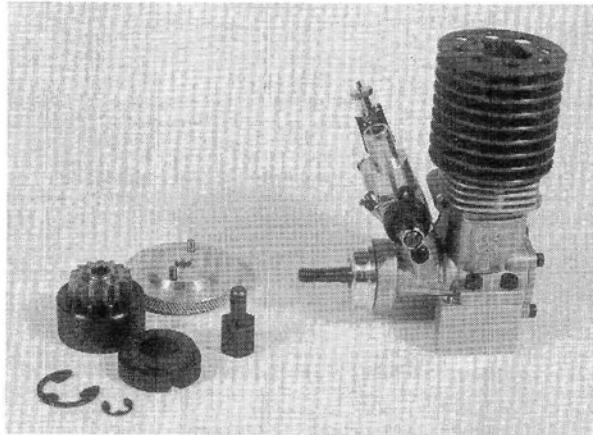
Like cholesterol, spent fuel and castor build up inside the cylinder walls and on the piston head, robbing performance and stealing life from your engine. Without proper maintenance, the engine could perish long before its time. To prevent the premature demise of your engine, you must inspect it and maintain it, just as a doctor would

your heart. Don't break your car's heart! Rebuild the engine regularly, and make sure every stroke is strong and healthy.

How often you rebuild your engine depends on what it's used for and how well you care for it between uses. The engines in most recreational cars and trucks probably don't have to be torn down nearly as often as high-performance  $\frac{1}{10}$ - and  $\frac{1}{8}$ -scale racing engines. But that doesn't mean that you should neglect them! To ensure that everything is running smoothly, new engines should be disassembled

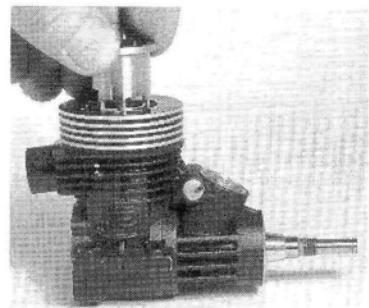


**After you've removed the cylinder head, look for the head shims. These shims determine the head spacing. It's extremely important that you don't lose them.**



*It isn't always necessary to remove the carb or the flywheel from the engine. Regular maintenance can be done with them on. If you suspect that something might be wrong with the bearings or the crank, however, you'll have to remove the flywheel and the clutch.*

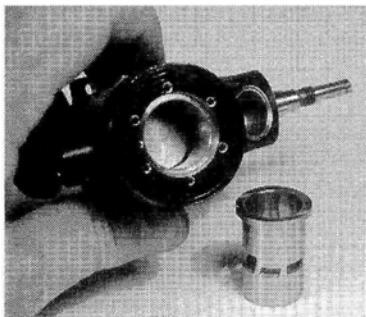
by JEFF BRONSTEIN



**When you can grab the cylinder sleeve, gently pull it out of the engine case. Never use any metal tool that might scratch the cylinder.**

and inspected after the first six or seven tanks of fuel. After that, you can rebuild them after every 10 or 15 tanks; never wait for longer than 20. Because there are higher demands on racing engines, you should inspect them every five to 10 runs. Always inspect an engine whenever its performance changes suddenly.

After every use, drain all the unused fuel from the tank, and run the engine dry. To burn any remaining fuel in the case, turn the engine over several times with the igniter in place. Then put several drops of after-run oil in the carburetor, and turn over the engine again



**Inspect each part for defects.**

to coat all the internal parts. Clean the outside of the engine with a small toothbrush and a spray bottle of methanol or denatured alcohol. An air compressor also works very well; it blows off dirt, grime and tire dust. If you allow this gunk to build up on an engine, it can impede cooling. Store the engine in a cool, dry place away from heat.

#### **REBUILD**

Start by making sure that everything on and around your work space is clean and dry, including your hands



**Look closely at the crankshaft pin where the connecting rod goes. Inspect the pin for blue or gold discoloration. If the pin bushing on the connecting rod isn't well lubricated, it can become very hot. This can ruin the heat treat of the crank, and that might cause the pin to eventually break away. The bushing on the connecting rod will probably go first, causing the rod to break.**

and your tools. Remove the engine from the car and thoroughly clean the exterior of the case, the head and the carburetor. Be especially careful not to flush any debris down the throat of the carburetor or into the exhaust. Put the engine parts on a clean, lint-free towel (kiddies:

don't use mom's good hand towels).

Remove the air filter, the pipe, the exhaust manifold and the fuel lines from the engine. Unless you suspect that something is wrong with the bearings, it isn't necessary to remove the clutchbell, the clutch, or the flywheel from the crankshaft every time you rebuild the engine.

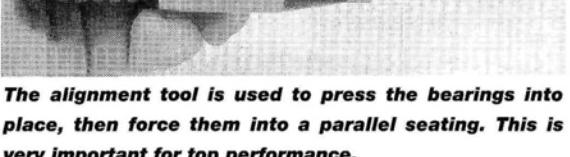
Use a precision screwdriver or an Allen wrench to remove the backplate screws; try not to ruin the screw heads. If the engine has a pull-starter, remove the plastic



**This tool helps you to reinstall the bearings in proper alignment. If you aren't sure that you can remove the bearings and then reinstall them properly, let someone do it who is.**

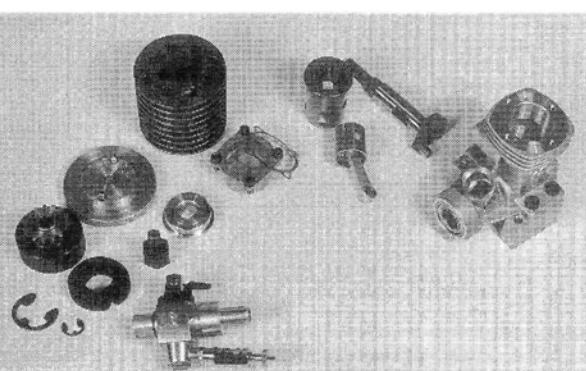
Now, inspect the inside of the engine thoroughly. Look into the back of the engine for deep scratches, damaged parts, metal discoloration, holes, cracks, etc. Look carefully for small fragments of metal in the case and on the glow-plug filament. They could be a sign of a much larger problem. These fragments are often the results of a worn connecting-rod bushing or excessive endplay in the crankshaft that allows it to scratch the backplate. Look for patches of rust or pits in the crankshaft inside the case. Inspect the top of the piston and the cylinder head for

pitting around the edges, which could be caused by a faulty air filter or by small particles of metal. There's usually a slight buildup of



**The alignment tool is used to press the bearings into place, then force them into a parallel seating. This is very important for top performance.**

cover to expose the backplate screws. Don't remove the E-clip on the housing; the return spring may uncoil. Keep track of which screws go where. Don't remove the backplate yet! On some .21 engines, the piston skirt may obstruct the backplate. Look through the exhaust port to ensure that the piston is in the top-dead-center position (TDC) before you remove the backplate. Some engines have a thin gasket around the cover, so watch for it and don't lose it. Next, remove the cylinder-head screws, and carefully wiggle the head off the case. Several thin head shims are sandwiched between the cylinder head and the sleeve. Remove them and put them with the cylinder head.



**Rebuilding the engine starts with a clean, dry engine case. Have all the parts ready for assembly.**

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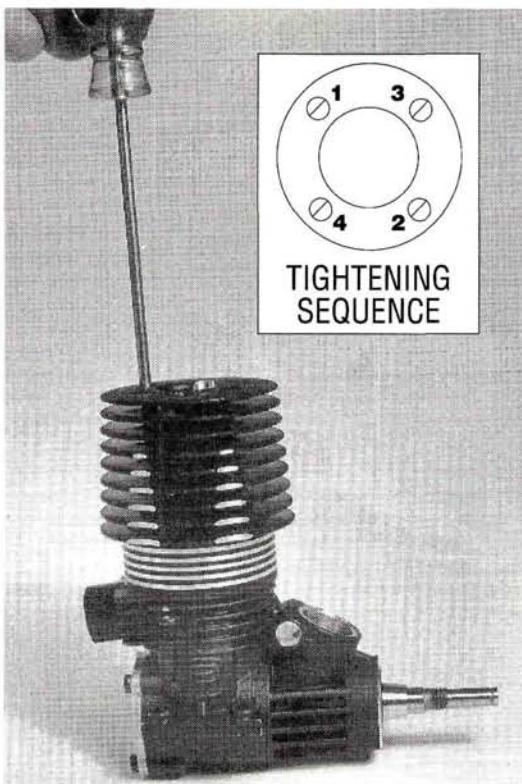
## ENGINE MAINTENANCE

tan varnish on the piston near the exhaust port. If a thick brown varnish covers most of the head, it's a sure sign that the engine was allowed to overheat or run without adequate lubrication.

To inspect the engine further, remove the cylinder sleeve, the piston and the crank. (Make sure that you note the orientation of the piston and sleeve. They are a matched set and must be replaced in exactly the same position.) The fit between the cylinder sleeve and the engine case is sometimes very tight. To remove it, turn the crank until the piston is at the bottom of its stroke (BDC). Place the end of a small plastic tie-wrap into the cylinder between the top of the piston and the bottom edge of the exhaust port. (Never stick anything into the cylinder sleeve that might scratch the lining.) Turn the crank carefully until a small piece of tie-wrap pushes the cylinder sleeve out of the engine case. After you've removed the cylinder, turn the crank so the piston is at TDC and the connecting rod and piston will slide off the crankpin. Then, gently tap the crankshaft until it backs out of the case.

When the engine is completely disassembled, inspect each part for signs of wear. Look for blue or gold discoloration around the crankpin. Feel the front and rear bearings for rough spots. Rock the connecting rod to feel for any resistance between the rod and the wristpin. If necessary, remove the C-clips and/or push the wristpin out to inspect the upper connecting-rod bushing and pin. Inspect the inside of the cylinder sleeve for scratches or gouges, and feel around the edges of the piston head and skirt for nicks or burrs. Slightly damaged parts can be repaired; in some cases, it's even fine to leave them as they are, but replacing them could prevent problems in the future. Never risk a bad connecting rod. The rod is the most critical internal part. If the bottom bushing on the connecting rod looks rough, or if you detect any imperfection, no matter how small, replace it immediately!

After the inspection, clean all the parts with methanol and a soft, clean cloth. Carefully remove the varnish from the piston with non-abrasive polishing cream. Never try to clean or polish the inside of the cylinder sleeve or the sides of the piston head. Some scoring or pitting on the piston, the cylinder head, or the backplate can be removed with 1000-grit sandpaper. If the bearings are damaged and must be replaced, heat the engine slightly to expand the crankcase; this makes it easier to remove the



After you replace the cylinder head and shims, tighten the head screws.

bearings. When you reinstall the bearings, keep in mind that alignment is very important.

To reassemble the engine, put the crankshaft back in, and fit the piston and the connecting rod onto the crankpin. Before you insert the cylinder sleeve, apply a coating of after-run or mineral oil to the inside of the case and sleeve. If there's no alignment pin, make sure that the sleeve is positioned so the exhaust port is aligned with the outlet. Put several drops of oil in the case, on the bearings and on the connecting rod. Replace the cylinder head and head shims and tighten all the head screws slightly. Tighten the screws gradually in an "X" pattern: first the upper left, then the lower right, then the upper right, then the lower left. Replace the backplate and gasket (if necessary) with the piston at TDC. Tighten the backplate screws snugly. Reinstall the carburetor and exhaust manifold, and install a new air filter and glow plug.

Between races, I like to keep my engines clean and dry by putting them in Ziploc™ resealable bags that are wrapped with rubber bands—of course, I'm a fanatic. The day before a race, I install the engine in the car and check all the gear and linkage alignments. Keeping the engine in perfect condition makes everything else at the racetrack just a little easier. Would you do anything less to keep your ticker in good condition? Have a heart, would ya? Keep that engine beatin'...the competition! ■



Contact: EAGLE DISTRIBUTING

## MRC THUNDER KING

(Continued from page 41)

### THUNDER KING HO!

World Scale is one of the most original ideas I've seen in quite a while. The Thunder King is a well-engineered, high-quality R/C vehicle. Its suspension really soaks up the bumps, and the Power Command tranny delivers power smoothly and efficiently.

The speed-controller problem is minor; the inclusion of the mechanical speed controller is a bonus to beginners, and owners will probably upgrade to an ESC when the mechanical unit goes.

Power-wise, the two 540 motors are adequate, but owners will definitely want to bolt in more horsepower—believe me, the chassis and suspension are up to the challenge! I'm not so sure that sub-C Ni-Cds are the way to go. After all, shouldn't bigger vehicles require bigger batteries? Maybe we'll see batteries with larger capacity in the near future.

MRC has scored a direct hit with the Thunder King. Newcomers to R/C will find its size simply awesome, and "old-timers" will

(Continued on page 118)

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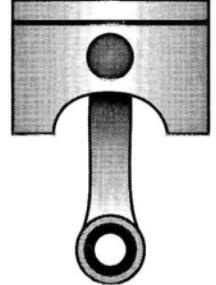
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# HOW TO CHOOSE FUEL

by JEFF  
BRONSTEIN



**Blue Thunder** is a castor/synthetic blend that's perfect for CZR .12s and .21 engines. Its blue color really has nothing to do with how it performs, but it does leave a blue varnish inside the engine.

**B**Y NOW, that killer nitro-burner you scored for Christmas or Hanukkah should be nearly together, and you'll want to gas it up pretty soon. The fuel you choose is critical to your car's performance. The dictionary defines fuel as "any substance that produces useful heat or power when burned."

Although we casually refer to fuel-powered R/C racing as "gas racing," the fuel used in most 2-stroke R/C engines is very different from the gas you pump into your full-size car. To determine which fuel is best for your needs, you have to know what the fuel contains. Some fuel blends perform best in recreational trucks and cars; others should be used only by experienced racers in high-performance engines. In most cases, fuel that has been blended for airplanes shouldn't be used for racing cars. How fuel is used and stored is also important, and how to use it safely may be the most important aspect of all.

Two-stroke model fuels can contain many ingredients, including oxidizers, lubricating additives, wetting agents, anti-foaming agents and corrosion inhibitors. Their two chief ingredients are:

- methyl alcohol (methanol). Many forms of full-scale racing also use methanol as fuel. Also referred to as wood alcohol, methanol vaporizes at 65 degrees, is colorless and has a distinct odor.
- nitromethane (nitro). It's used in most fuels as an oxidizer. Oxidizers or "combustion improvers" make the fuel burn hotter and more quickly to produce more power. An engine that runs on fuel containing less than 5 percent nitro will idle poorly. Too much nitro will cause excessive heat and wear in the engine. In most engines, fuels that have a nitro content of between 10 and 20 percent will produce enough power. Although a higher percentage of nitro can be used in some racing conditions, it gives only limited gains in performance and presents substantially more risk of damage to the engine.

## SMOOTH LUBES

The type and amount of lubricant used in racing fuel probably has the most bearing on an engine's performance and longevity. Fuel must contain some lubricants—synthetic or natural—to reduce friction between an

engine's internal parts. Castor oil (from the castor bean) is the chief natural lubricant used in fuel, and many racers still believe that it outperforms any synthetic. When an engine gets hot, castor oil bonds with the piston and sleeve to create a "varnish." This varnish continues to protect the metal parts after the fuel has burned off, but it accumulates and must eventually be removed. On the other hand, high-tech synthetic lubricants in the fuel burn off cleanly, but because they leave no residue, the engine is unprotected.

Fuel manufacturers like to give their special lubricants peculiar names like "XWT" or "Z-71"—whatever sounds really cool—but it's all basically the same. For most racers, the best combination is a blend of synthetic and natural lubricants that burn cleanly, but that still leave some residue to coat the moving

# WHO'S FUELIN' WHO?



**Need the warnings on fuel bottles. Fuel is dangerous, and it can be abused. Car-racing fuel should only be used to power your model engine. (Don't use it to light your charcoal grill.)**

## HOW TO CHOOSE FUEL

parts in case the engine runs hot. Unlike model airplane fuels, which contain too much lubrication for our needs, competition racing fuels are blended for the best performance from your car.

Wetting, anti-foaming and anti-corrosion agents help to improve the engine's performance and keep it running. Wetting agents work like soap to break down fuel molecules' surface tension and allow fuel to coat internal parts more readily. Fuel-tank vibration causes foaming and bubbling; anti-foaming agents prevent this, so nothing but liquid reaches the carburetor. Along with regular cleaning and maintenance, anti-corrosion agents in the fuel prevent rust and corrosion from pitting the crank, the bearings and other internal parts.

Although a few backyard fuel brewers concoct their own potent blends of "go juice," there's something to be said for the quality control of larger, more reputable fuel manufacturers. Quality and consistency in a fuel mixture



**Left:** O'Donnell racing fuels have been used by some of the fastest racers in the U.S. They're well known for their high-quality ingredients and consistent performance.

**Right:** Cool Power claims to have developed a blend that will improve performance and increase power because it contains ingredients that actually keep the engine cooler than other fuels. (This is a common claim.) Don't confuse Cool Power car fuel with Cool Power airplane fuel.



and cylinder sleeve to an extremely close fit and to heat-treat the parts simultaneously. A low-nitro fuel won't allow the engine to run at the same temperature as regular racing fuel, so it shortens the heat treatment.

Break-in your engine with the type of fuel you plan to use when you race. If you race with a fuel that's more than 20 percent nitro, break-in your engine in steps, using 20 percent nitro for several tanks and then your regular racing fuel. I add several drops of "first press" racing castor to the first five tanks of fuel. After that, I use the same fuel and nitro percentage that I use for racing.

Fuel must be kept in a tightly sealed container and stored off the ground in a cool, dry place. Never leave a jug of fuel on a concrete floor. Condensation can form on the inside of your container and ruin the fuel. This will ruin the fuel. Keep the container capped at all times. The methyl alcohol part of the fuel will evaporate very quickly if the fuel is uncapped, and this will alter the fuel mixture. Between races, drain the fuel tank completely. Also, castor doesn't mix well with methanol and nitro, and it tends to settle in the bottom of a container. Before each use, shake the fuel jug vigorously and keep the fuel bulb nearly full.

I can't emphasize enough that *fuel can be dangerous*. Don't confuse the methyl alcohol in fuel with the ethyl alcohol in alcoholic beverages. If swallowed, methyl alcohol can paralyze the optic nerve and may cause blindness or death. When testing for leaks in a fuel system, never suck on fuel tubing. To a small child, the colorful fluid in a fuel bulb may look like a soft drink. I know I'll never set my Gatorade down next to my fuel jug again. (Yes, I did.)

Fire is also a real threat. Methanol burns extremely hot—so hot that its flames can be invisible. Avoid having it in prolonged contact with your skin, and never expose fuel or fuel-soaked rags and clothing to open flames or sparks.

Now that you have all the fuel facts, be sure to mix a little fun into all this seriousness. Fun comes in every blend of racing fuel I've found (100 percent, in some cases). As long as you use some common sense when you use fuel, it's unlikely that you'll have any problems. In all the years that I've watched and raced nitro-powered cars, I've seen only small fuel-related accidents. If, by reading this article, you can avoid even one small incident, gas racing will be a safe, enjoyable pastime for the whole family.



The methanol in racing fuel soaks up moisture like a sponge. Always store fuel in a tightly sealed bottle, in a cool, dry spot. Drain the fuel tank between uses, and keep the fuel bulb nearly full and capped off.

is very important. If the fuel is mixed in small quantities, some ingredients can vary by as much as 3 or 4 percent between gallons. This could cause inconsistent performance and possibly even engine failure. A credible fuel maker will always ensure that his fuel is consistent from one gallon to the next. If there's any doubt about a fuel's contents or its quality, don't use it. There are several extremely good racing fuels, and I encourage you to try a few and choose the one that seems to give the best performance.

For the first few tanks, some racers use a special low-nitro "break-in" fuel. This might not be a good idea, especially if you use 10 to 20 percent nitro (or more) when you race. We break-in our engines to burnish the piston



RADIO CONTROL CAR ACTION

# RACER NEWS

WORLD CLASS RACING

## LOSI OPENS FIRE WITH NEW

For those of you who weren't aware, ROAR has finally legalized 2.2-inch rims for competition in sanctioned events, and Team Losi has jumped the gun (pardon the pun) with 22 Caliber—its new line of 2.2-inch rims and tires.

The 2.2-inch rims were the center of a controversy at the '89 IFMAR World Championships in Australia. Apparently, Yokomo had kept its new, larger-diameter wheels and tires—which worked extremely well on the hard-packed Aussie track—a secret until the event. Many of the have-nots felt that they were at a distinct disadvantage. Subsequently, these larger wheels were disallowed by ROAR (they were legal in Europe and Japan, and under IFMAR rules), which limited maximum wheel diameter to 2.150 inches.

In an effort to standardize racing regulations worldwide, ROAR has finally given in and has brought its maximum 1/10-



## 22 CALIBER WHEELS AND TIRES

scale off-road-buggy wheel size up to 2.2 inches.

Losi's new wheels are similar in design to its LX-T truck rims, e.g., they have a smooth inner side and a Lexan outer shield that prevents dirt from collecting. You can paint the Lexan shields so that they match the car's color scheme. The new rims are available in neon yellow or natural, and they fit all Losi cars and Associated's RC10.

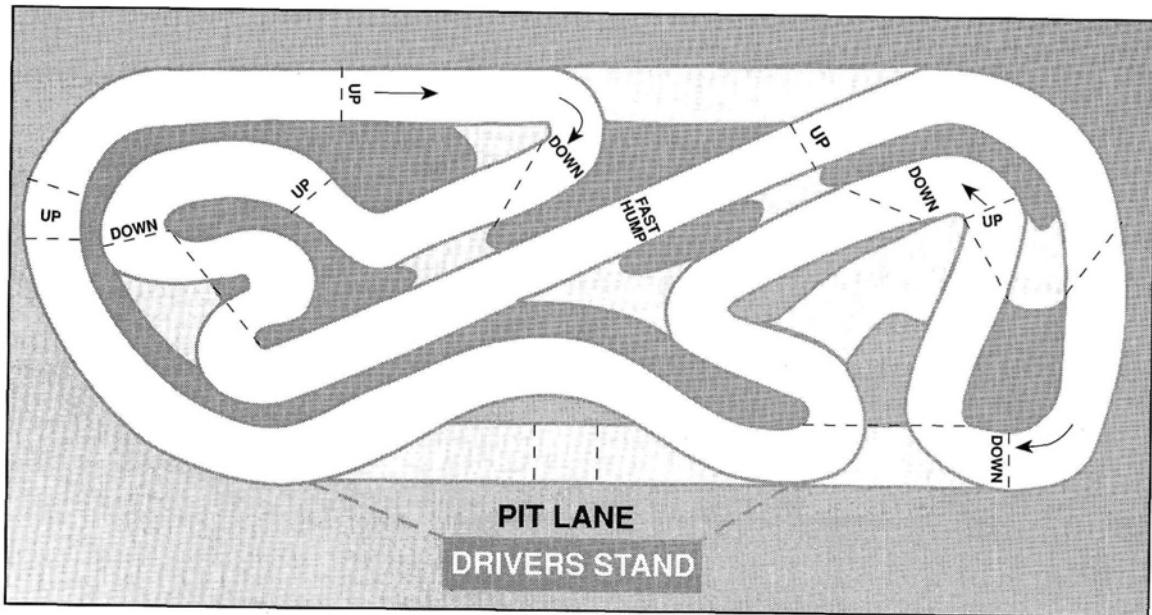
Three new, 2.2-inch tire designs—based on some of Losi's existing 2-inch tread patterns—fit the new rims: the Micro Step Pin, Step Pin

and X-Pattern rear tires. Two advantages of using these larger-diameter tires are increased stability (owing to the tire's lower sidewall profile) and the larger tire contact patch. All three tires have a rounded "cavas" design that helps to prevent them from snagging on ruts, which can cause a car to flip.

### C O N T E N T S

100 Speed Shop	120 Motor Maintenance	129 Inside the Insane Run Winner
104 Car Action/Parma/PSE Shootout	125 RC10L Front Ends	147 Track Directory

**1993 IFMAR 1/10TH OFF-ROAD WORLD CHAMPIONSHIPS  
T.E.M.A.C. PROVISIONAL RACE CIRCUIT**



**Y**es, the land that brought you the Queen, punk rock, pale people and too much rain is now bringing you the '93 1/10-Scale IFMAR Off-Road Worlds from July 28th to August 4th. The Southend Radio Control Car Club will host the Worlds in the merry old town of Basildon, England, which is approximately 30 miles east of London. The SRCCC has hosted such races as the British Grand Prix in 1988 and the European Championships in 1991.

The SRCCC was formed in 1981 and was initially involved in stock cars, mini stocks and 1/12-scale on-road R/C cars. The club built an off-road track in '82, and a new track is being designed specifically for the Worlds (see illustration).

For those who will attend this year's race, right next to the track are a large swimming pool, a cinema, a boating lake, a golf course, ATVs, jet skis and many other amenities.

The '93 Worlds will be sponsored by Associated Electrics and Parma/PSE, and we should see all the new high-tech machinery—from them and from other manufacturers—at this event.

Stay tuned until next month, when we'll give you an in-depth preview of the hot items and setups that just might show up at the Worlds.

## **BIG BEN BRINGS ON THE WORLDS**

### **AMAZING AUTORAMA**

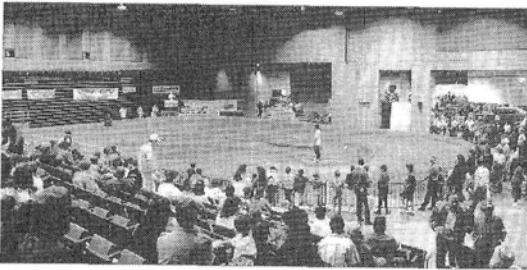
**R**/C hits the big time! We flew out to Texas to check out the Houston Autorama over the three-day Thanksgiving weekend, and we were quite surprised. An R/C race that featured both dirt-oval and off-road racing was featured at the show. The races drew quite a crowd and attracted many newcomers who had never realized that R/C racing was so intense.

Not only did we get to see some really good club racing at the event, but we also had a chance to check out some hot-looking, full-scale show cars with tricked-out paint jobs and chromed engines.

There were other attractions as

well: full-size indoor sprint-car racing; the Batmobile, the "Batboat" from the second movie and the Penguin's "Duckmobile"; all the newest dirt bikes, ATVs and personal watercrafts from Honda, Yamaha, Kawasaki and Suzuki; and the bikini-clad "American Dream" calendar girls, who signed autographs and passed out their newest calendar.

The car show will travel throughout the country, and there's talk of making the R/C exhibition a permanent attraction. If it's going to be a regular feature, we'll let you know when the show will hit an area near you.



## RACER

## NEWS

# SPEED SHOP

## SAIKO RACING PRODUCTS

### Pro Brush Cutting Kit

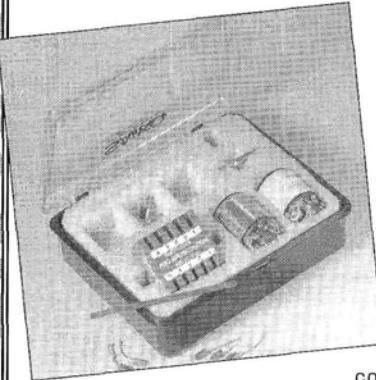
For years, the pros have known about the improved performance of properly tuned brushes. Now you can get that edge. Made of hard-anodized aluminum, this rugged, precise jig comes with a high-quality cutting file and a storage case that has multiple brush compartments and space for two race-day motors. It includes complete, detailed instructions and a

booklet, "Brush Cutting Tips from the Pros."

Part no. 2010

Price: \$59.99

Saiko Racing Products, P.O. Box 1515, Tustin, CA 92681; (714) 642-4977.



## POINT BLANK Master Motors

This ROAR '91-legal slotted short-stack stock motor has a super-light armature. A new wire-winding pattern produces much more torque, and that makes this motor ideal for small, tight tracks. Hoods are aligned; silver brushes and heavy springs are installed. New 5.0 wet magnets are fully charged, and the motor is dyno-tested for maximum performance.

Part no. P301

Price: \$28

Point Blank, 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



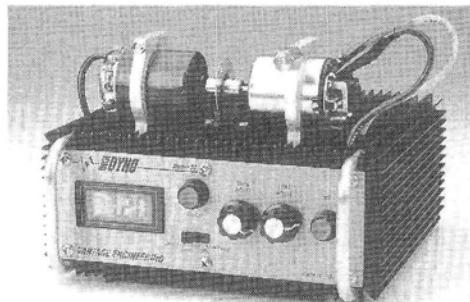
## VANTAGE ENGINEERING Digi-Dyno

The Digi-Dyno motor dynamometer allows both stock and modified motors to be tested at load up to 30 amps, with test voltages that simulate track conditions. The Digi-Dyno reads volts, amps, rpm and maximum power output in watts. Its load is infinitely variable from 0 to 30 amps, and this allows you to monitor the motor's output and rpm under any load. Within seconds, you can determine the most powerful motor and/or motor modifications and gearing information.

Part no. MS100

Price: \$499

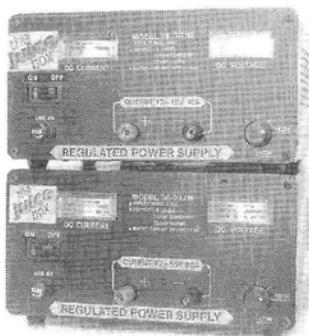
Vantage Engineering, 681 Main St., Waltham, MA 02154; (617) 894-8694.



## OUTLAW PERFORMANCE PRODUCTS

### The Juice Box

These regulated DC power supplies are portable and suitable for benchtop use. They have a linear power output of 13.8V DC, lighted on/off power switches, universal binding post contacts, short-circuit protection and built-in fuse protection. Metered Juice Box



units 391M (deluxe heavy-duty) and 392M (super heavy-duty) also include an output current meter, an output voltage meter, an adjustable output voltage (12 to 15V DC) and current-limiting protection.

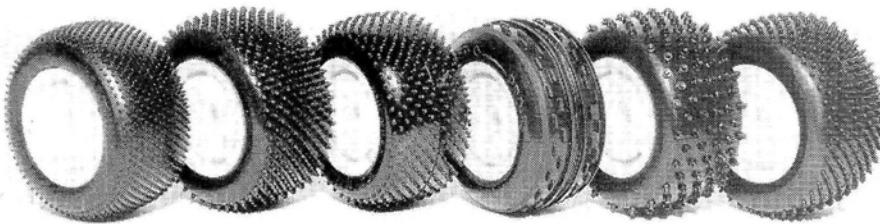
Outlaw Performance Products, P.O. Box 531, Islip, NY 11751; (516) 277-3865.

## **PRO-LINE RED XTR Tires**

Race Engineered Design's tire series now has soft, light XTR rubber compound that was designed to dominate hard-packed racing conditions. XTR compound is a proven performer; it made a clean sweep of every Off-Road Modified Championship race at the '92 ROAR and NORRCA Nationals.

From the left, 2.2-inch XTR truck tires: Fuzzie "T" rear ultra-mini-pin (8092); Traction Plus rear step-spike (8130); original rear mini-pin (8090); multi-ribbed front with staggered mini-bars (8065); rear step-spike (8150); and rear coarse spike (8120).

Pro-Line, 201 W. Lincoln St., Banning, CA 92220; (714) 849-9781.



### **MOTOR MAN Tornado/Hurricane**

The Motor Man Tornado and the Hurricane are machine-wound modified motors with ball bearings and adjustable timing. The Tornado is a 19-turn, double-wind, and it's perfect for all R/C cars. It's faster than a stock motor, but it's easy on delicate gears. The Hurricane is a 15-turn, double-wind that produces incredible speed. The price is a plus—perfect for speed demons on a budget.

Part nos. MM19D (Tornado); MM15D (Hurricane).

Price: \$39.95

Motor Man, 8950 Osage Ave., Sacramento, CA 95828; (916) 381-7491.

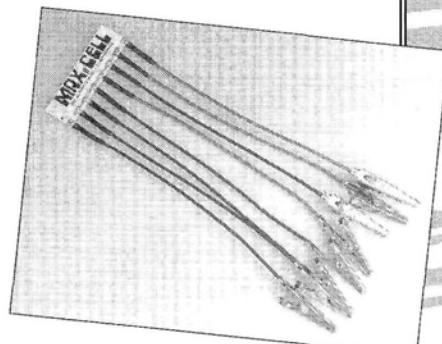
### **MAXIMUM PERFORMANCE PRODUCTS Pack Manager**

Keep your battery packs matched with the compact, assembled, easy-to-use Pack Manager. Use it after a run to bring each cell down to the same point safely and hold it there without the possibility of cell reversal. This method keeps batteries matched much longer than any other.

Part no. 1002

Price: \$14

Maximum Performance Products, P.O. Box 1211, Mt. Laurel, NJ 08054; (609) 988-8198.



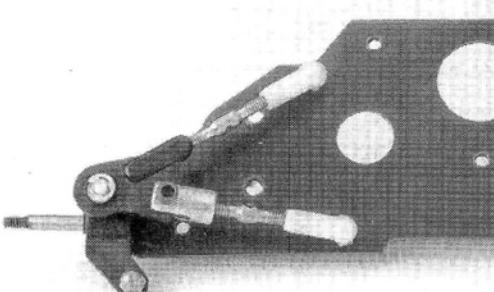
### **TRINITY PRODUCTS Evolution 10RCS**

The Evolution 10RCS (Reactive Caster Suspension) front end has a carbon-graphite lower arm and upper links that allow infinite caster, camber, damping, spring rate and roll-center adjustments. The unique design also allows the caster to decrease as the car turns, and this improves the car's front-end traction and stability as it exits the turn. It's a direct bolt-on accessory for your Associated RC10L and Bolink 1/10-scale cars. It comes with parts and instructions for fast, easy assembly.

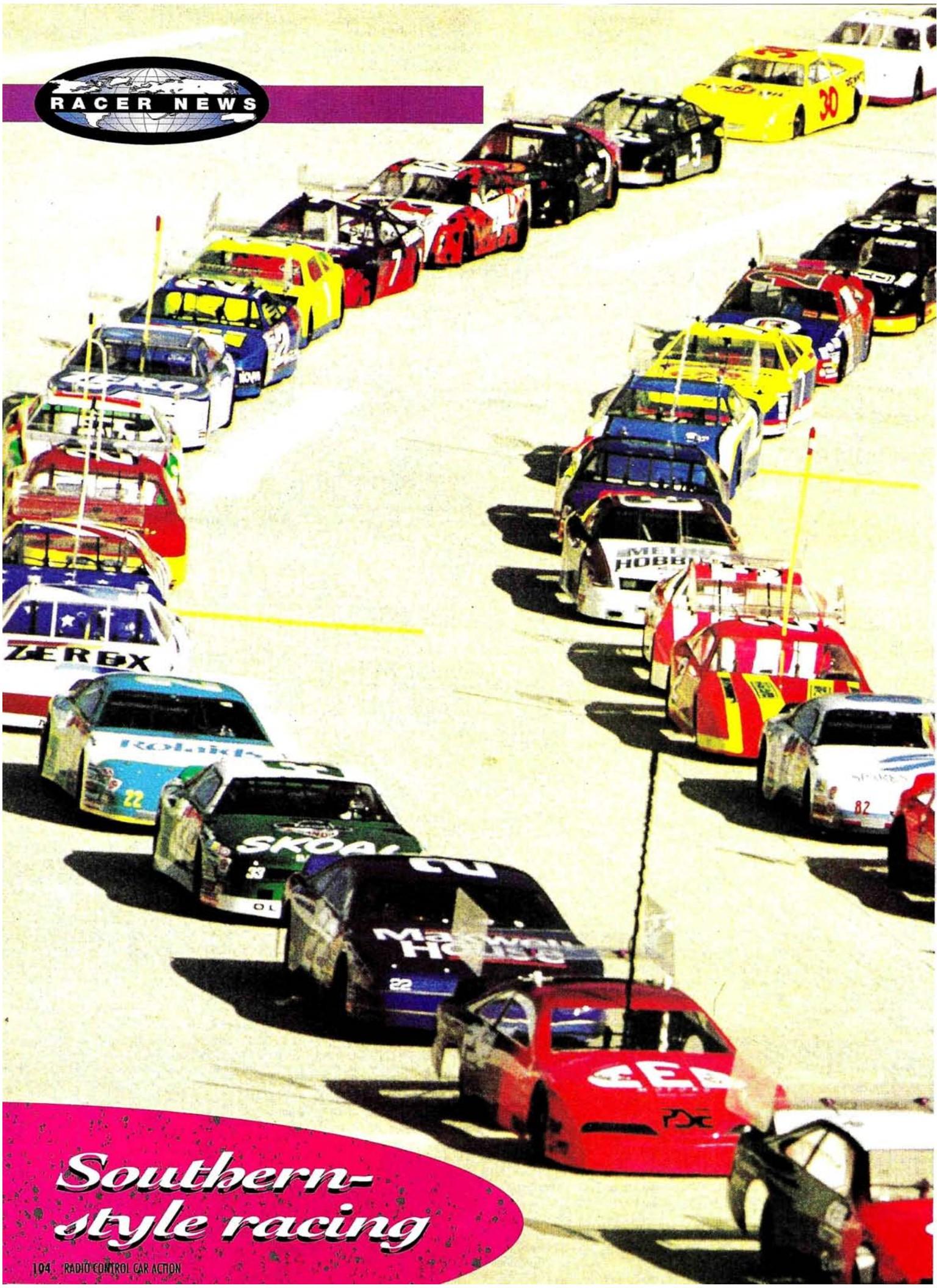
Part no. EV0011

Price: \$79.99

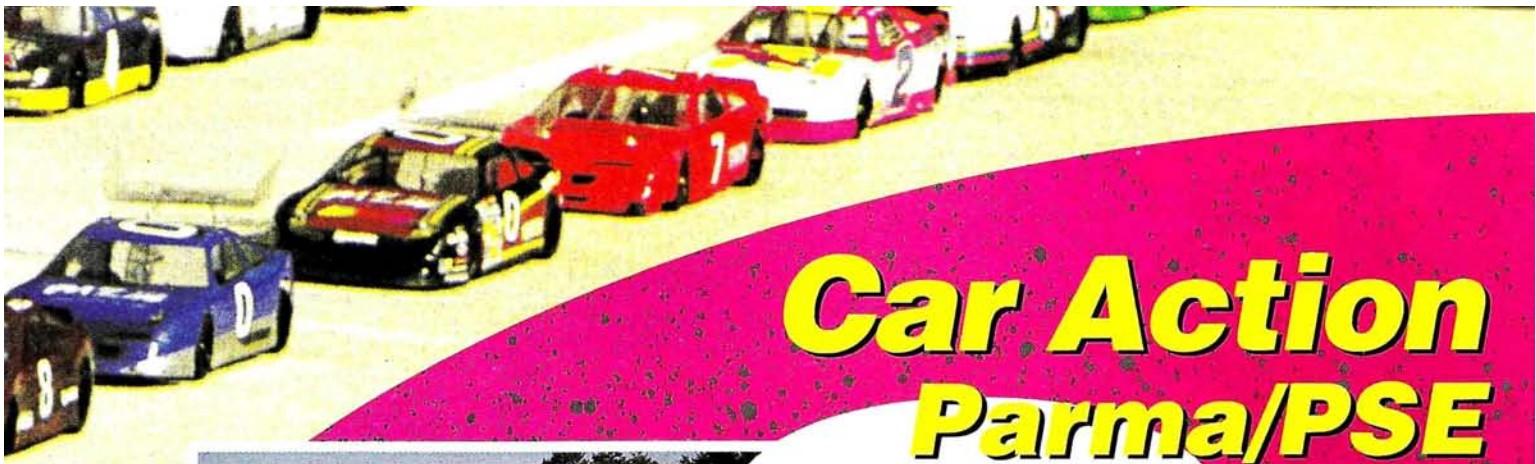
Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705.



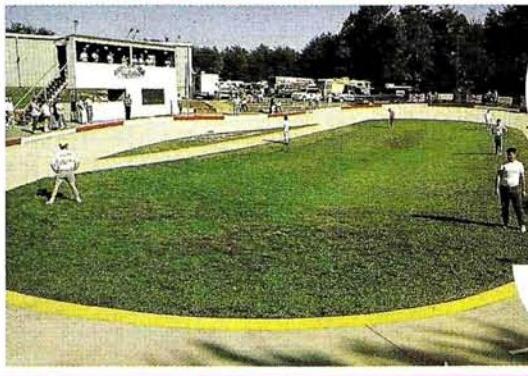
*Descriptions of the products shown on these pages were derived from press releases supplied by manufacturers and/or their advertising agencies. The information given is neither an endorsement of the product by Radio Control Car Action, nor a guarantee of performance or safety. If you write to the manufacturer about any product described here, be sure to say that you read about it in Radio Control Car Action.*



*Southern-style racing*



**Car Action**  
**Parma/PSE**

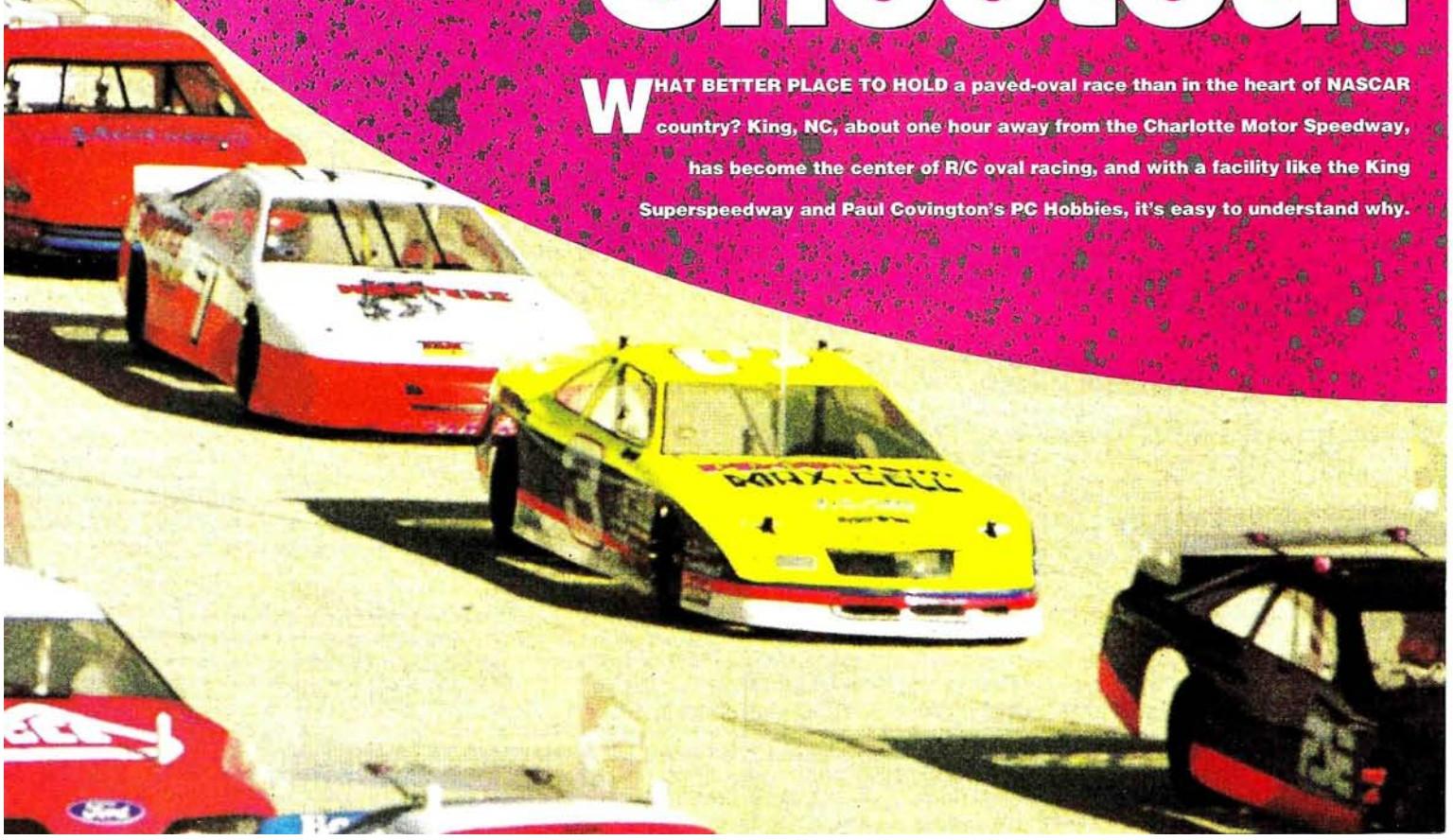


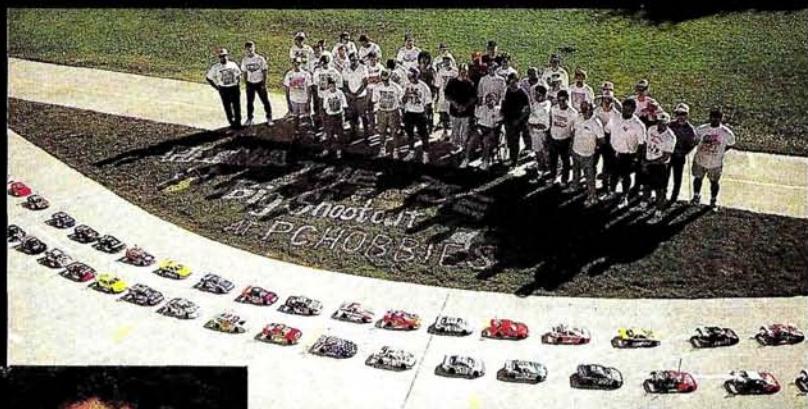
PHOTOS BY JOHN THAWLEY

by JOHN THAWLEY

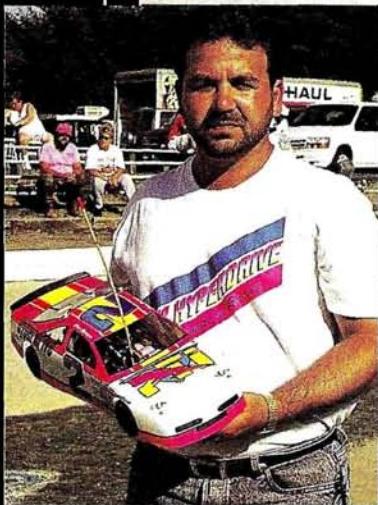
# Super speedway Shootout

**W**HAT BETTER PLACE TO HOLD a paved-oval race than in the heart of NASCAR country? King, NC, about one hour away from the Charlotte Motor Speedway, has become the center of R/C oval racing, and with a facility like the King Superspeedway and Paul Covington's PC Hobbies, it's easy to understand why.





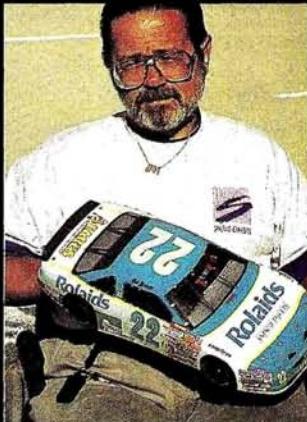
**Here are the participants of this year's Car Action/Parma/PSE Superspeedway Shootout.**



**Here's Phil Assef with his car, which took top honors in the Best Paint category.**



**The Enduro A-Main.**



**Below: Ralph Burch TQ'd in the Enduro Class.**



**Concours winner Bob Bertotti proudly displays his no. 22 Rolaids car.**



**Action in pit lane.**

King Superspeedway is probably the best oval facility in North America. It offers plenty of pit space and a full-service hobby shop. The track is 412 feet of smooth concrete—a small-scale replica of Charlotte Motor Speedway's racing surface. It's a drivers' track. You'd better know how to handle the horsepower before you try to lay it down.

This fall's annual *Car Action* Superspeedway Shootout was co-sponsored by Parma/PSE. If this event was anything, it was fun!

The Thunderdrome schedule made it impossible for some big factory teams to attend, though I must admit that they weren't missed. More than 170 hardcore drivers signed up for the Shootout, and the racing was excellent. Some smaller factory teams were on hand: Parma/PSE, CAM Motors, Hyperdrive/PTI, East Coast Modified, McLin Racing and Wolfe Motorsports.

#### **QUALIFYING**

- Stock. Because of Thursday's bad weather, the practice schedule was erratic. Friday morning was shaky, but it did clear up in time to start the one scheduled round of Enduro qualifying. It was clear that Stock qualifying would be tight, so a perfect run would be required.

Saturday was a day made for racing: there was picture-perfect weather, and qualifying got under way with Stock round two. Former national champion Tim Holland upped the stakes with a 35/4:06.43 and took over the top spot. Doug Butz, who had TQ'd in round one, dropped to 2nd. Only about 5 seconds separated the 1st from the 10th-place racer.

In round three, the Stock drivers continued to narrow the gap between 1st and 10th. The hot sun slowed the track in round four, and Steve Scaggs bumped Butz down to 3rd.

- Modified. Modified was no picnic either. Chris Smith piloted his Hyperdrive car to a TQ for round one. He had a lot to worry about though. Four cars shared a 1-second spread behind him.

In round two, these challengers put on a show of their own. Though there was no change in the top five, the remaining spots really tightened up. Only 2 seconds separated Anthony Little's 6th position and Eddie Carr's 10th.

Modified drivers went wild in round

# CAR ACTION 1000 ENDURO

How about going 1,000 laps around the King Superspeedway?

It's enough to make a grown man cry. OK, OK; quit your whining. We'll give you two days to get it done!

Even if you split it between two days, doing 1,000 laps is no easy feat. The winning car was driven by two drivers! That's right! You read it correctly. Chris Smith was unable to continue in the Enduro because of the flu. After a vote by the other teams, Tim Holland stepped in for Smith.

For the qualifying rounds, officials divided the 12 registered teams into two groups. Each group ran two, 12-minute qualifying rounds.

The Enduro Mains consisted of two equal legs: 500 laps on Saturday night and 500 on Sunday. Officials impounded the cars between the two legs.

Run under the lights, the first leg was a close battle between Ralph Burch and Chris Smith. Gary Warren, the second-fastest qualifier, and Tony Lavoie got into trouble, and Lavoie spent the early part of the race in the pits. He practically had a new car by the end of the first leg. Warren's troubles continued. Although he finished 5th with 428 laps, he spent the last 5 minutes of the race on the bench. Nine cars were running at the end of the first leg.

The rules for leg two instructed the teams to have one crew member retrieve their car from outside the track and take it to the pits for service. Before the car could enter the race, the crew had to change all its tires and replace the battery pack. Remember, the clock was running.

One by one, the cars began to roll out of the pits. The tire-change rule made the start of leg two interesting. A lap around the King Speedway takes about 6.7 seconds on average; if you're sitting in the pits, it doesn't take long to fall behind.

Burch and Smith/Holland had the cars to watch, but disaster struck the Burch team. Caught in a collision with back traffic, Burch damaged the rear of his car. His crew replaced a few bent parts and a spur gear to get him back on the track, but it was too late. Burch's car fell about 20 laps behind the Smith/Holland car and never recovered. Since their lead was comfortable, Holland brought their car in and replaced a damaged body post as a precaution.

Their only dilemma was whether Tim Holland's chewing gum could go the distance!

three, and in round four, they had to deal with the same hot track conditions that the Stock drivers coped with. The standings remained the same.

## MAIN EVENT SUNDAY

• Stock. At the sound of the horn, Tim Holland put his claim on the Stock class. He was the first to start and the first to finish. He drove a perfect race—so perfect that he improved his qualifying time by more than 5 seconds. Smith finished 2nd with his best Stock run of the weekend. Mark Decker, Jason Houser and Larry Flowe finished 3rd, 4th and 5th, respectively, coming across the line 38/100 second apart.

• Modified. The Modified A-Main came down-to-the-wire. With both front-row drivers struggling with the flu, many people thought the Main was up for grabs. At the horn, the cars pulled away cleanly. Buddy Wolfe was out in front early, but he soon got into trouble with traffic, and Smith went to the front. Almost a half a lap back,

Ralph Burch, started to track him down, and by the 3-minute mark, he was charging. With 30 seconds to go, Smith's batteries started to go soft, and he looked as though he'd fall victim to Burch. With less than two laps remaining, however, both Burch and Smith had used too much battery power. David Timmerman charged from 5th place and took the win with Smith and Burch in 2nd and 3rd respectively.

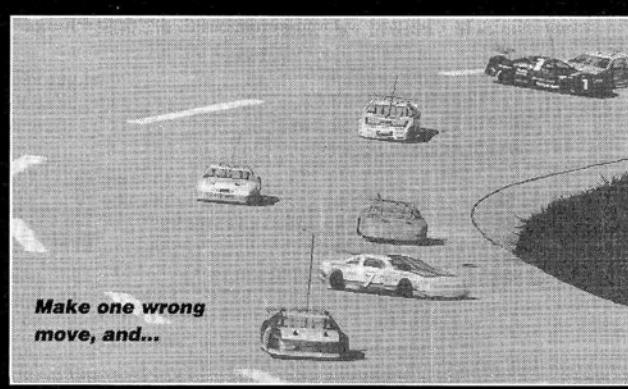
The excitement in the Mains was the result of a well-organized event and excellent facilities. This was the most fun I've had at an oval race in a long time.

Congratulations to Paul Covington, the staff of PC Hobbies and the sponsors—Parma/PSE and R/C Car Action.

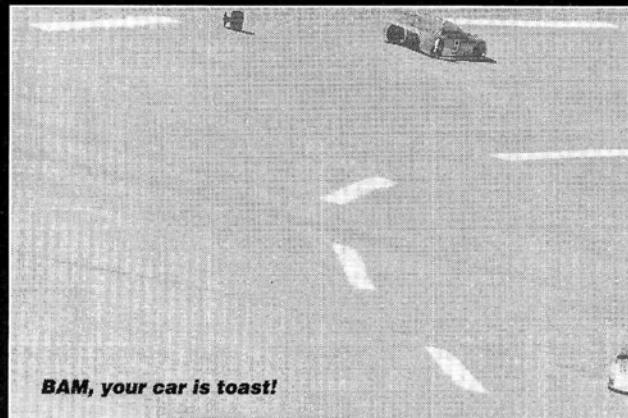
*Race results and more photos next page...*



Enduro winner Tim Holland of Team Holland and Smith.



Make one wrong move, and...



BAM, your car is toast!

# MCLIN RACING PIT CREW CHALLENGE



**Team Rogers**



**The Modified A-Main winners.**



**A rare moment! Here's a sneak peek at Tim Holland's Stock TQ and his winning Hyperdrive car. It's actually sitting still!**

## STOCK

Fin	Qual	Name	Chassis	Body	Motor	Batteries	Tires	Radio
1	1	Tim Holland	Hyperdrive	Bolink	P	.PTI	TRC	Futaba
2	6	Chris Smith	Hyperdrive	PSE	A	.PTI	TRC	n/a
3	4	Mark Decker	CEB Custom Lynx	Bolink	R	.CEB	TRC	Futaba
4	5	Jason Houser	CEB Custom Lynx	Bolink	M.H.	.CEB	TRC	Futaba
5	8	Larry Flowe	Hyperdrive	Bolink	A.A.	.PTI	TRC	Futaba
6	2	Steve Scaggs	Hyperdrive H10RS	Parma	N	Parma/PSE	TRC	Futaba
7	10	Jeff Fields	Hyperdrive H10RS	Bolink	D	.PTI	TRC	Airtronics
8	9	John Foister	Hyperdrive SE	Protoform	O	Super Cell	TRC	KO Propo
9	3	Douglas Butz	CEB Custom Lynx	Bolink	U	New Wave	TRC	Futaba
10	7	Terry Ruffy	Hyperdrive	Parma	T	.CAM	TRC	KO Propo

## MODIFIED

Fin	Qual	Name	Chassis	Body	Motor	Batteries	Tires	Radio
1	1	David Timmerman	Associated 10L SS	Bolink	East Coast	.New Wave	TRC	KO Propo
2	2	Chris Smith	Hyperdrive	PSE	East Coast	.PTI	TRC	Futaba
3	5	Ralph Burch	Hyperdrive H10RS	Protoform	CAM	.PTI	TRC	Futaba
4	10	Nick Themelis	Associated 10L SS	Bolink	Mighty Motors	.PT	TRC	Futaba
5	6	Tim Sykes	Hyperdrive/Bolink	Bolink	CAM	Hurricane	TRC	Airtronics
6	8	Brandon Tilley	Hyperdrive	Bolink	CAM	.CAM	TRC	Futaba
7	9	Tony LaVoie	Bolink LTO SS	Bolink	CAM	Team Smooth	TRC	JR Propo
8	7	Anthony Little	Hyperdrive	Parma	CAM	.PTI	TRC	Futaba
9	4	John Themelis	Associated 10L	Bolink	Mighty Motors	.PT	TRC	Airtronics
10	3	Buddy Wolfe	Bolink LTO	Bolink	CAM	.PTI	Bolink	Futaba

## CAR ACTION 1000

Fin	Qual	Name	Chassis	Body	Motor	Batteries	Tires	Radio
1	3	Smith/Holland	Hyperdrive	Parma/PSE	East Coast	.PTI	TRC	Futaba
2	1	Ralph Burch	Hyperdrive H10RS	Protoform	CAM	.PTI	TRC	Futaba
3	4	Michael Hudson	Hyperdrive	Bolink	CAM	.CAM	TRC	Futaba
4	6	Chris Rice	Hyperdrive H10RS	Bolink	CAM	.CAM	TRC	Futaba
5	8	Cliff McDaniel	Bolink	Parma	East Coast	.PTI	TRC	Futaba
6	2	Gary Warren	Hyperdrive	Bolink	CAM	.PTI	TRC	JR Propo
7	7	Tony LaVoie	Bolink QC	Bolink	CAM	Team Smooth	TRC	JR Propo
8	5	John Foister	Hyperdrive RS	Protoform	Bad Boy	Super Cell	TRC	KO Propo
9	10	Matthew Rogers	Hyperdrive	Protoform	CAM	.PTI	TRC	JR Propo
10	9	Joby Uchtman	Associated 10L SS	Parma/PSE	Reedy	Ballistic	TRC	KO Propo

**A**n addition to this year's *Car Action* Shootout was McLin Racing's Pit Crew Challenge—a pit-stop competition between the Enduro teams' mechanics and crews.

A driver had to pull his car into a specified pit area. As the car entered the pit, it would start a computer clock. The crew couldn't touch the car until it had come to a complete stop. If it went over the line or onto the grass, the team was penalized by 2 seconds.

Once the car had stopped, the crew had to change the right front tire, the right rear tire and the battery. Rear tires had to have at least two screws. After this, the driver had to exit the pit and complete one lap to register the time. Officials then checked the car for axle end play and for loose or stripped screws.

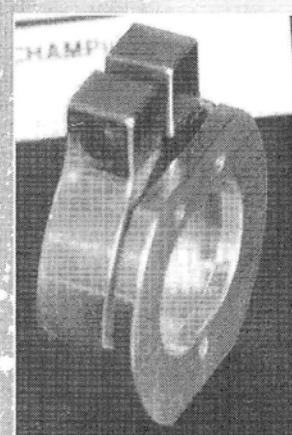
Sounds easy enough, right?

**Competition was surprisingly close. The fastest stop was at 31.554 seconds; the slowest was at 51.778 seconds. The deciding factor, however, turned out to be the penalties.**

**The Matthew Rogers team won with a 32.557 second stop and no penalties. Second place went to Gary Warren's team. Although they had the fastest stop, they were penalized for stripping a hub nut. After being penalized for going over the line, Tony Lavoie's team was 3rd at 42.617 seconds.**

**The McLin Pit Crew Challenge was a lot of fun and an excellent way to involve the pit crew in the racing.**

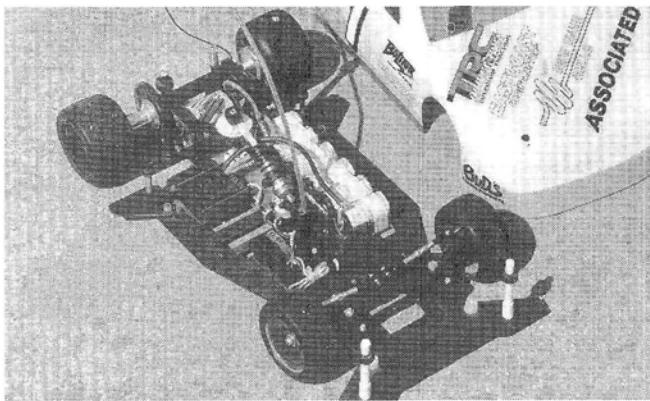
**David Timmerman accepts his awards for TQ'ing and winning the Modified Class.**



**A close-up look at the CAM quick-change motor pod.**



**Ralph Burch's Hyperdrive was another highly "motorvated" car.**



**Not only did David Timmerman TQ in Modified, but he also won it. Here's his Associated car.**

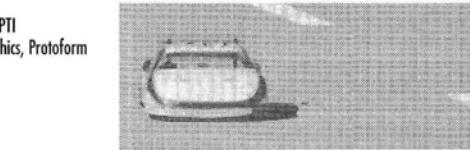
ESC	Sponsors
Tekin 411G	Hyperdrive/PTI, Parma/PSE, Power Surge
n/a	Hyperdrive/PTI, East Coast, Parma/PSE, Ronnie Walters
Novak MXc	CED, Hagerstown Moped, Parma/PSE
Novak M1c	CED, Parma/PSE, Brian Booze, Hagerstown Moped, TRW RP
Tekin 411G	Hyperdrive/PTI, Tekin, TRC, Power Surge, PSE
Tekin 410K	Parma/PSE, Hobby Hangar, TRC, Thor Dyno
Novak MXc	Fountain Hobby Center, M.J. Fields
Novak	Thor Dyno, Super Cell, Bad Boy Motors
Tekin 411G	Edith's Pizza, CEB Motors, Hagerstown Moped, ERP, Rachel
Tekin 410K	CAM, Hyperdrive

ESC	Sponsors
Tekin	East Coast Motors, New Wave, Associated, Bud's Bolink
Novak M1	Bud's, Bad Dog, East Coast, Tecnacraft, Parma/PSE, Hyperdrive/PTI
Tekin 411G	Hyperdrive/PTI, CAM, Futaba, Tekin, Tecnacraft, Bud's, Autographics, Protoform
Novak M1	Mighty Motors, PT Matched Cells, Glen West Auto Care
Tekin	CAM, Bolink, BME, Hurricane Batteries, PT Matched Cells
Tekin 410K	CAM, Hyperdrive, McLin Racing
Tekin 410K	CAM, Bolink, Team Smooth
Tekin 410K	N/A
Novak M1	PT Matched Cells, Mighty Motors, Glen West Auto Care
Tekin 411G	Bolink, BSR, CAM, Tekin, Bud's Wolfe Motorsports

ESC	Sponsors
Novak M1	East Coast, Parma/PSE, Hyperdrive/PTI, Novak, TRC, Bud's
Tekin 411G	Hyperdrive/PTI, Futaba, Tekin
Tekin	CAM, Bolink
Tekin 411G	CAM, Bolink, Champion Racing Products
Tekin	McLin Racing, East Coast
Futaba	Tekin 411G, CAM, Hyperdrive/PTI, Tekin
Tekin 411G	CAM, Bolink, Team Smooth
Novak	Thor Dyno, Super Cell, Bad Boy Motors
Tekin 411G	Hyperdrive/PTI, CAM, Protoform
Tekin	Associated, Reedy, Ballistic



**The Stock A-Main winners.**



**Here's Mike Ellis (of Parma), Paul Covington (owner of the King Superspeedway) and Mike Houge (of PSE).**

## **CAM QUICK-CHANGE MOTOR POD**

**B**ecause necessity is the mother of invention, you often spot R/C car innovations at major events, and this one was no exception.

Between the two legs of the Car Action 1000, the cars were impounded. Racers couldn't work on them until the second leg was under way.

Now, you don't have to be a rocket scientist to figure out that 500 laps are tough on a motor. The drivers needed a way to change their motors quickly without altering the gear mesh, and Tate McDaniel of CAM Motors was determined to find one. He sat down at his drawing board and designed this quick-change motor pod.

Here's how it works: you attach a bracket to your motor and then install the assembly in your car. Before you tighten the screws that hold the assembly in place, however, you must align the pinion gear with the spur gear and check that the gear mesh is correct. To release the motor and replace it with a fresh one, you simply turn one screw; the bracket remains on the car.

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Overseas Distributors: G & M Trading-Australia, H.L.F., Inc.-Japan, Keil Germany, Hartley Brown-Canada, Speedy Cars-France, Thor Racing - U.K., Send \$2.00 cash for catalog and decals - 14978 Sierra Bonita Ln., Chino, CA 91710

## MRC THUNDER KING

(Continued from page 86)

find pleasure in driving something completely different.

\*Here are the addresses of the companies mentioned in this article:

MRC, 200 Carter Dr., Edison, NJ 08817.

KO Propo, distributed by Global Hobby Distributors, 10725 Ellis Ave., Fountain Valley, CA 92728.

Futaba Corp. of America, 4 Studebaker, Irvine, CA 92718.

Motion Graphics, 2645 Robert Arthur Rd., Westminster, MD 21157.

Coverite, 420 Babylon Rd., Horsham, PA 19044. ■

## KYOSHO RENAULT F1

(Continued from page 64)

glossier on these parts, but I used the same paint I used on the body to ensure a reliable color match. The driver's helmet is covered with decals that you soak in water to remove from the backing sheet. You don't have to trim any excess, and they're so thin that they'll look as if they've been painted on. They're very flexible and conform nicely to the helmet, but this flexibility makes it difficult to keep them straight. Soak them for about 30 seconds, and put the decal—with the backing in place—on the helmet. Put your finger on the decal and slide the backing out from under it. You have a few seconds to slide the decal into its final position. When it's where you want it, pat it dry with a paper towel. Once it has dried, it can't be moved.

## DRIVING IN STYLE

If you follow the directions carefully, the finished car will need few adjustments. My only adjustment was to raise the ride height a little in the front—about  $\frac{1}{8}$  inch to prevent the front wing from rubbing the ground when it goes over little bumps.

There must be a trick to getting the body on and off quickly, but I don't know what it is. You have to hook the body on the front, slip it under the rear wing and fit it over two body posts all at the same time! Once you get it on,

(Continued on page 132)

## Subscribe RADIO CONTROL CAR ACTION

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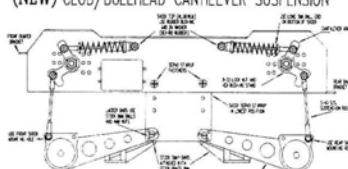
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1992 CHEV SILVERADO STRETCH LEXAN BODY	\$19.95
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ALUMINUM ROLL BAR—FITS MOST MONSTER TRUCKS (MUSHROOM SHAPE)	\$24.95
CLO/BULL TRIPLE SHOCK STAND FOR HD SUSP.—4WD \$19.95—6WD	\$49.95
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USAT ALUMINUM BODY POSTS FOR CLO	\$99.95
BIG BODY BIPOLAR VETTA ALUMINUM CHASSIS & ALUM. STEERING	\$99.95
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**Take two comm drops and  
call us in the morning**

# Motor maintenance

If you want to keep your R/C car running in top shape, one of the most important things you can do is maintain your motor. It's lucky for those of you who haven't been schooled in the ways of cleaning and/or rebuilding your motor that we're here to help you.



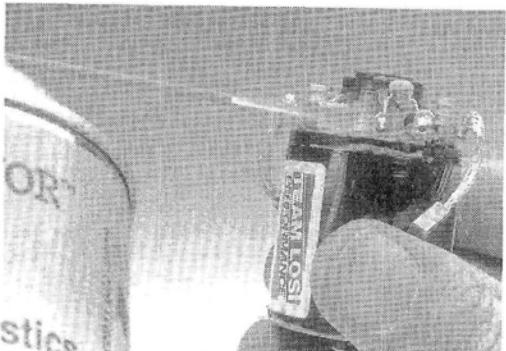
## STOCK MOTOR TIPS

### ■ Step 1

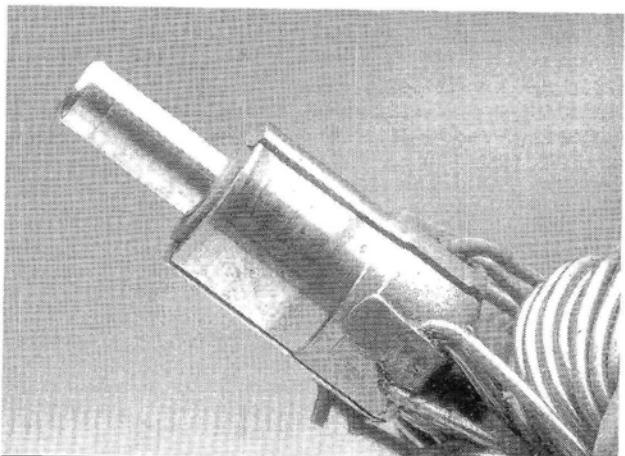
When it's time to clean your stock motor, take it out of your vehicle. Why? If you spray motor spray directly into the motor can, it can drip into your gearbox, and some sprays damage plastic.

### ■ Step 2

After you've removed the motor, spray it with a high-quality motor spray, or put it into a motor bath (where you can actually keep it running while it's submerged). You must use a high-quality spray. Cheaper sprays often contain chemicals that could damage the epoxy that prevents the motor's windings from touching one another and shorting out. Also, don't use too much motor spray (most people do); a short burst of spray does the trick. If you douse the motor with the cleaner, you'll push deposits farther down into the motor can and cause more damage.



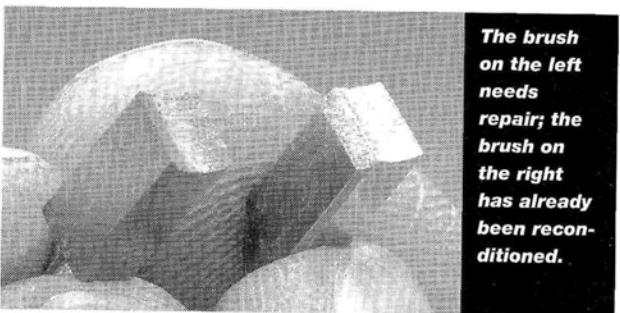
**Use a short burst of spray when you clean your motor. If you flood it with motor spray, you could push deposits farther down into the can. High-quality motor sprays are a must!**



**Check the commutator for damage. Discoloration, nicks, or deep scratches mean it's time to rebuild.**

### ■ Step 4

Brush inspection! Check for obvious wear and a reduction in length. (It's best to compare an older brush with a new one to see whether there's a significant difference in length). Look for chips and nicks caused by debris, and for discoloration caused by arcing between the brushes and the commutator. Arcing is when a brush bounces or jumps off the commutator because of insufficient spring tension (the brush is too short), or surface irregularities.



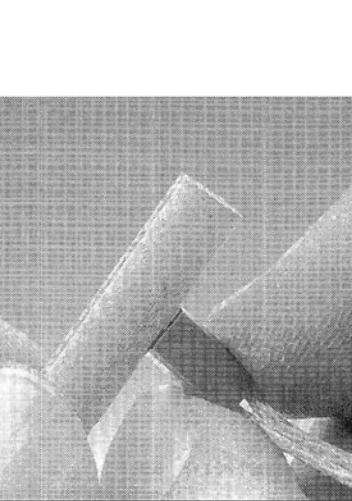
**The brush on the left needs repair; the brush on the right has already been reconditioned.**

### ■ Step 3

Now inspect and clean your commutator. Look into the motor hood, and check the commutator for signs of damage, e.g., burns, spots, discoloration or grooves. If you see any of these, it may be time for a new motor. If the commutator is in good shape and only needs a cleaning, insert a slightly abrasive comm stick into one side of the brush hood while you spin the armature. Don't apply too much pressure; you may damage or distort the commutator's surface.

### ■ Step 5

If you need new brushes, replace them; if you don't, clean your old ones. Brushes have built-in lubricants that become liquified by friction heat and form a glaze on the surface that comes in contact with the commutator. Remove this glaze with the round end of an abrasive comm stick. Rotate the brush in the direction in which the commutator spins. A few companies make lubricants that help to prevent brushes from glazing over.



**To de-glaze your brushes, take a comm stick and spin it across the brush surface in the direction the commutator rotates. A few companies make comm drops that minimize glazing.**

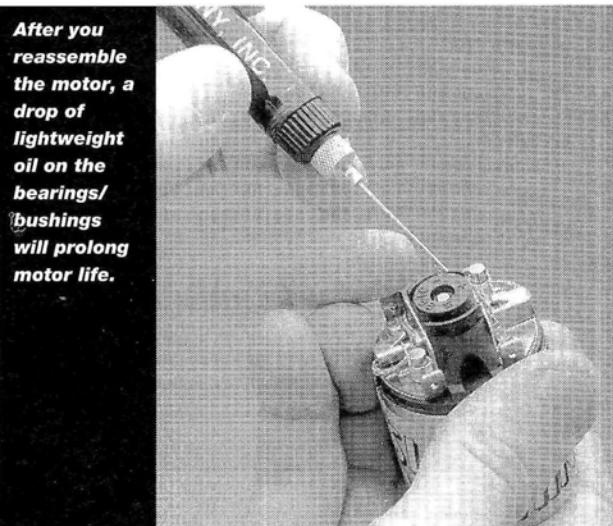
### ■ Step 6

To recondition your used brush, use a small flat file at a 45-degree angle to file down its trailing edge. Then, lightly file down its leading edge to remove burrs.

### ■ Step 7

After you've re-installed your brushes, put a few comm drops through the hood, onto the ends of the brushes. Then put a drop or two of oil on both bushings.

**After you reassemble the motor, a drop of lightweight oil on the bearings/bushings will prolong motor life.**



### ■ Step 8

You've finished reconditioning your stock motor, so now it's time to break-in the brushes. Before you use new or reconditioned brushes, you must break them in properly.

Run the motor at 4 to 6 volts for roughly 15 minutes. After 15 minutes, check the brush surface to see how much of it is in contact with the commutator. Break-in the brushes until 80 percent of the brush is touching the commutator.

Also, after you've removed the brushes to inspect them

## The Shim-Sham

**M**otor shims have a purpose, and it isn't to center the brush on the commutator. Shims not only prevent the armature from moving back and forth in the can, but they also keep it centered in its magnetic field. Most important, in modified motors, they prevent bearings from wearing prematurely.

When you remove the armature from the can of a modified motor, you'll feel substantial resistance, because you're pulling it away from the center of its magnetic field. When the motor shims have been installed correctly, they keep the armature centered in this field. Incorrect installation of the shims results in the armature continually trying to pull into the center of the field, and this puts a constant load on one of the motor bearings. This leads to excessive friction and premature bearing failure.

To determine where to put the shims, assemble the motor without them and don't tighten the endbell. Keep the endbell in place with a finger, then hold the motor horizontal and spin it to allow the armature to find the center of the magnetic field. When the armature comes to a stop, pull it toward the bottom of the can by grabbing the shaft where the pinion is usually attached.

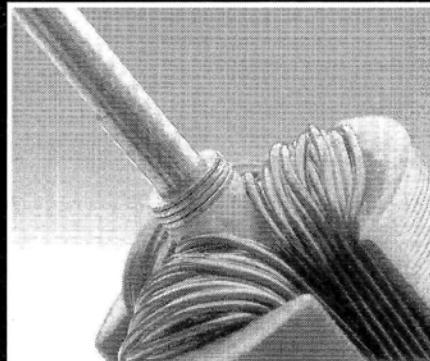
The distance the armature moves before it hits the bearing will determine how many shims you should use on that side of the shaft. The position of the magnets in the can determines where the armature will be centered. This varies from motor to motor: it might take one shim, or it might take three.

To install shims, take the armature out of the can, and place a shim over the bottom of the shaft. Put the armature back in the can, replace the endbell and spin the motor again. To determine whether another shim is necessary, pull the shaft toward the bottom of the can. Repeat this procedure until there's very little movement when you pull the shaft toward the bottom of the can.

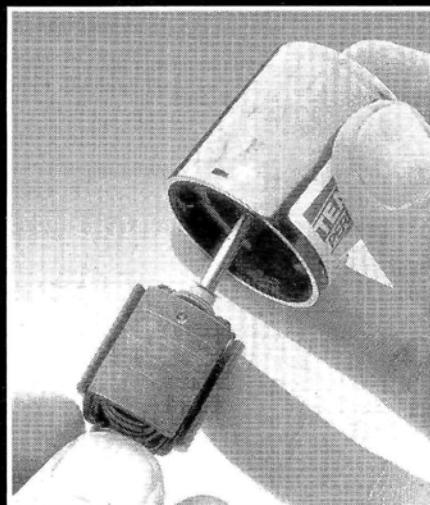
Now take the same steps to determine how many shims are needed on top of the armature near the commutator. Spin the motor to center everything,

only this time, push on the shaft while you hold the endbell firmly in place. Repeat this process, adding one shim at a time, until movement is very limited. Tighten the endbell with the timing mark in its proper position, and check the motor end play to make sure there's still a little armature movement.

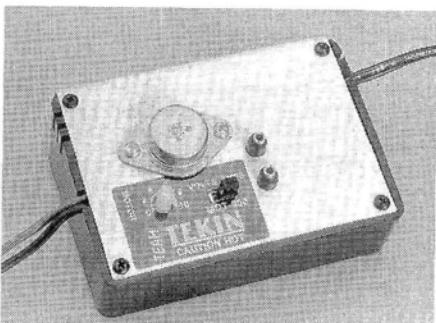
Practice makes perfect. It may take a few attempts for you to complete this procedure correctly, but it will certainly help you to extend the life of your motor bearings.



**Shim placement is crucial to long bearing life.**



**When you remove the armature from the can, invert the motor so the shims don't fall off the shaft. When you remove the shims, be sure to store them in the order in which they came off the motor.**



**Motor break-in devices, such as this Tekin MOT 800, help greatly after you've rebuilt or reconditioned your motor. Run the motor between 4 and 6 volts until the brushes are properly seated (80 percent of the brush should be in contact with the commutator).**

damaged, it's time to rebuild the motor.

#### ■ Step 3

Remove the brushes, and recondition them (follow Steps 5 and 6 from the "Stock Motor Maintenance" section).

#### ■ Step 4

After you've removed the brushes and reconditioned them, take them off the can and remove the brush springs. Loosen the screws and mark the motor can to indicate timing points and polarity.

#### ■ Step 5

Rotate the endbell clockwise to separate it from the can. Remove the shims that are on the shaft above the commutator. Put them in a safe place, keeping them in the order in which they came off the shaft.

#### ■ Step 6

To remove the armature, turn the can upside-down and pull it out. Remove the shims from the bottom of the shaft, and put them with the other shims, in the order in which you removed them. Don't confuse the two groups of shims.

#### ■ Step 7

Once the armature is out of the can, spray the inside with motor cleaner. Use enough to clean the bearings and other components.

#### ■ Step 8

After you've cleaned the can, spray the armature with motor spray and decide whether to cut the comm. If you decide to, you can buy a comm-cutting lathe and do it yourself, or you can check with your hobby shop to see if they offer comm-cutting services. You could even ship your motor back to the factory and have them total-

(after you've broken them in), run them for an extra 2 to 5 minutes when you re-install them to re-seat them. When you break-in your brushes, be sure to keep the motor cool with a small electric fan.

So there you have it! Now your stock motor should be back up to speed.

### MODIFIED MOTOR MAINTENANCE

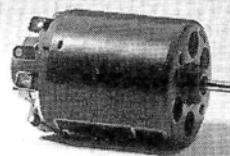
#### ■ Step 1

Take the motor out of your car.

#### ■ Step 2

Inspect the commutator for damage, wear and discoloration. If the commutator is

## Aero-car Conducta



You're probably quite familiar with comm drops. You use them to give your stock motor that short burst of extra horsepower that will allow your car to get the all-important holeshot. You've also been told that using comm drops will decrease the life of your motor because it builds up and attracts copper particles between the commutator segments; this is only partly true.

Some comm drops, such as Aero-Car's\* Conducta, actually increase conductivity between the brushes and the comm, and they prolong motor life at the same time.

If you apply two to three drops of Conducta before each run, you'll still get that holeshot, but the motor's amp draw will be reduced by as much as 25 percent, and the comm won't become "gummed up."

Conducta works with silver brushes, but it tends to soften them. You'll have the best results if you use it on brushes that contain more carbon.

ly rebuild it, but that takes a little time—time that will keep you out of the game.

#### ■ Step 9

If your commutator only needs freshening up, clean it with a slightly abrasive comm stick.

#### ■ Step 10

When everything has been cleaned and you're ready to reassemble your motor, lubricate the bearings with a light oil, and lubricate the commutator with comm drops.

#### ■ Step 11

Reassemble the motor with the shims in the proper order.

#### ■ Step 12

Break-in the reconditioned or new brushes (see Step 8 in "Stock Motor Maintenance").

As you can see, it doesn't take too much time to recondition your motor properly, but you must be efficient! Don't try to cut corners. If you do, you may be compromising your motor's performance!

\*Here's the address of the company that's mentioned in this article: Aero-Car Technology, P.O. Box 336, Western Springs, IL 60558.



**P**RODUCT MANUFACTURERS and after-market parts have been around since the dawn of time. Hey, who knows? Maybe if General Custer had had titanium dogbones, Little Bighorn wouldn't have been his last stand. You get the idea.

As soon as new products hit the shelves, other companies have already updated them. This is progress, and we see a lot of it in the R/C world. Someone is always bettering the competition.

#### IN THE BEGINNING

Associated's 10L is among the elite of  $\frac{1}{10}$ -scale on-road cars. Almost everyone who's involved with on-road racing—oval, superspeedway, or roadcourse racing—has probably raced or driven a 10L at one time. But, as I said, progress never stops, and after-market accessories have propelled it to a higher plateau. Trick items such as hot wheel/tire combos, ultralight rear pods, titanium axles and hubs and mega-strong chassis are just the beginning.

So where does the 10L go from here?

So far, much progress has been made in front-end and suspension technology. Recently, Associated designed an all-new front end for the 10L, and other companies, such as Composite Craft, Inside Line and Trinity, have retaliated in the never-ending, "ultimate front-end" battle. So, let's look at the hottest among the hot 10L accessory front ends.

by JOHN HOWELL

## Suspension Solutions RC10L FRONT ENDS

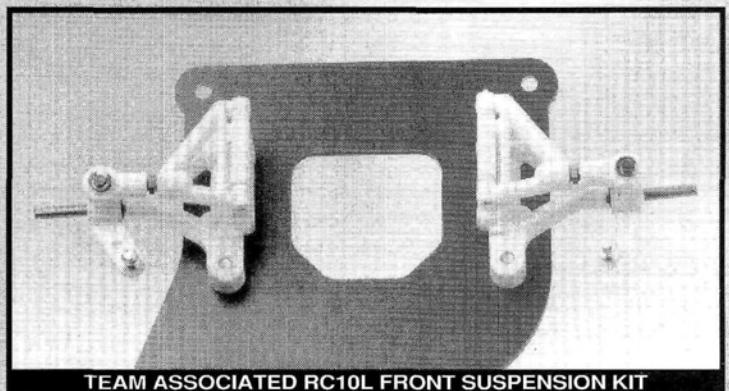
#### TEAM ASSOCIATED

Associated's RC10L Front Suspension Kit debuted at the IFMAR  $\frac{1}{10}$  Scale Worlds in Pomona, CA, in late July '92. In one compact unit, the kit has adjustable camber, caster, toe-in and toe-out. To adjust camber, turn the upper-arm turnbuckle with the wrench that's provided. You can adjust for positive or negative camber without removing any parts from the front end.

To change the caster, pull out the hinge pin, and slide the caster shims either forward or backward. There are three possible caster settings that allow racers to fine-tune steering in 2-degree increments. Angled upper-arm mounts make these caster changes possible.

Turn the steering turnbuckles with the wrench to make toe-in and toe-out changes; changing the springs and their tensions is also easy.

The Associated front suspension kit's gross weight is 1.98 ounces (2.23 ounces with the included servo-saver). Its retail price is \$39.



TEAM ASSOCIATED RC10L FRONT SUSPENSION KIT

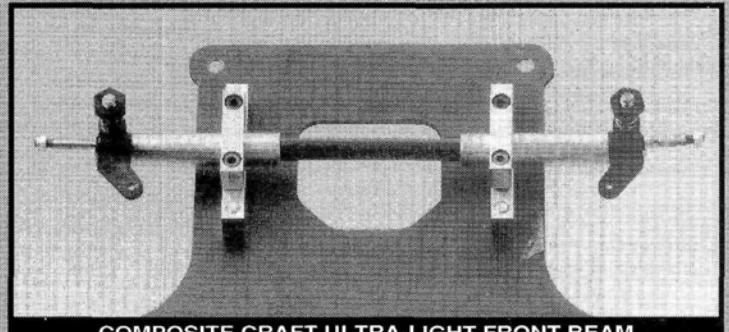
PHOTOS BY MALTER SODAS

#### COMPOSITE CRAFT

This Ultra-Lite Front Beam kit is a revised version of TRC/Composite Craft's popular magnesium-crossbar-beam front end. The main difference between the two is that Composite Craft's front-end beam is graphite, and TRC/Composite Craft's is magnesium. The 1.79-ounce front end weighs less than the TRC/Composite Craft front end, and it also absorbs more shock and "gives" more if it hits anything. This front end has extremely durable  $\frac{5}{32}$ -inch kingpins.

When selecting steering blocks, you can use  $\frac{3}{16}$ -bearing, on-center steering blocks (the kingpin goes through the center of the axle), or you can use the  $\frac{1}{8}$  bearing with trailing axles. The  $\frac{3}{16}$ -bearing, on-center steering is more responsive than the other.

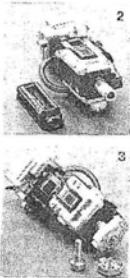
Another beneficial feature of this front end is that the kit's two-piece cinch blocks allow you to alter the car's wheelbase: make it longer for superspeedways and shorter for on-road courses or tight ovals. Its retail price is \$63.95.



COMPOSITE CRAFT ULTRA-LIGHT FRONT BEAM

# TXR-002

ULTIMATE 4CH  
RADIO CONTROL  
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1/10 SCALE ULTIMATE 4CH RADIO CONTROL ROBOT

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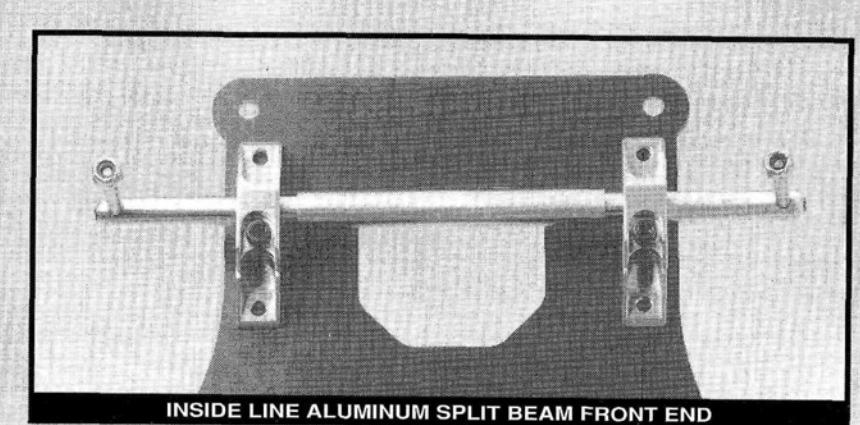
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## RC10L FRONT ENDS



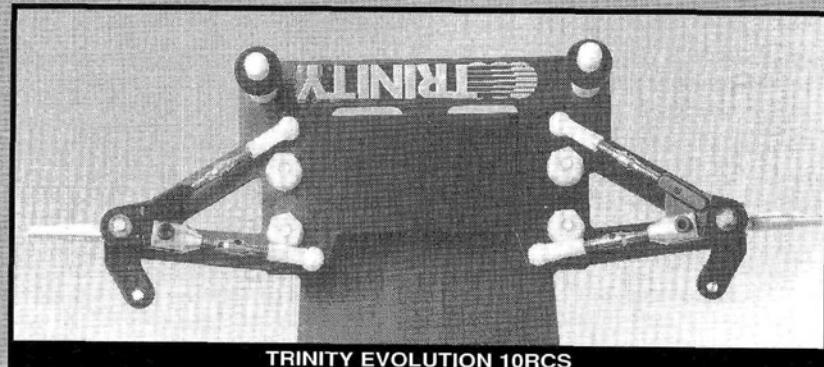
INSIDE LINE ALUMINUM SPLIT BEAM FRONT END

### INSIDE LINE

The Inside Line Aluminum Split Beam front end is extremely light (1.30 ounces) and easy to adjust. It's handmade of high-grade aircraft aluminum, and it offers adjustable camber, caster and width. This front end also allows you to convert a wide car into a superspeedway car without making any chassis modifications. It uses small kingpins; E-clips aren't used to hold the front end in line. You can get positive or negative camber by flipping the half axle over; once it's set, it doesn't have to be adjusted again.

The half axles are made of light, 7075 aluminum and fit into a seamless, extruded-aluminum beam. The  $\frac{3}{8}$ -inch wide blocks are made of 2024 aluminum. This front end is designed to be used with the 0-degree shims that come with the stock Associated 10L kit.

A Standard kit and a Pro kit are available. The Standard kit (\$65.95) includes four half axles: one pair of 2-degree half axles; one 3-degree and one 4-degree half axle. The Pro kit (\$76.95) includes six half axles: one pair of 2-degree and one pair of 3-degree half axles; and one 4-degree and one 5-degree half axle. You may also order half axles with different settings.



TRINITY EVOLUTION 10RCS

### TRINITY

Trinity's bolt-on 10L front suspension—the Evolution 10RCS—is the same kind of front end that Joel Johnson used on his winning Evolution 10 car. It has a carbon-graphite lower arm and fully adjustable upper links that allow infinite caster, camber, damping and roll-center adjustments. Its unique design also allows its caster to decrease as its suspension is compressed, and this improves front-end traction and stability in turns.

The front end weighs 1.80 ounces, and it comes with all the parts you need and complete instructions for fast, easy assembly. The Evolution 10RCS front end is bolted directly onto the Associated 10L, and it uses the 10L's suspension arms, which must be modified. Its retail price is \$79.99.

\*Here are the addresses of the companies mentioned in this article:

Associated Electrics Inc., 3585 Cadillac Ave., Costa Mesa, CA 92626; (714) 850-9342.

Composite Craft, 7640 Commerce Center Dr., Orlando, FL 32819.

Inside Line, 12859 Rte. 108, Highland, MD 20777; (301) 854-2701.

Trinity Products Inc., 1901 E. Linden Ave. #8, Linden, NJ 07036; (908) 862-1705. ■



INSIDE  
THE

# TANIAKE

RUN  
WINNER

by FRED HOEK



The R/C Thunderdrome can be likened to a pay-per-view championship boxing match. You pay to see the main event, but you get to watch a few secondary fights in the bargain. Thunderdrome is like that; for the price of admission, you get the privilege of watching some of the hottest superspeedway race action imaginable—but the Insane Speed Run is still the main event.

The '92 Thunderdrome's larger, faster track promised shattered records across the board. Everyone knew that Clausen's '91 record of 75.96mph would fall, but who would break it? And by how much?

The answer to that question came as Team HPI's Gary Hamilton obliterated Clausen's record with a scorching 85.02mph run!

85.02MPH...  
'NUFF SAID

## INSANE RUN WINNER

### WORLD'S FASTEST!

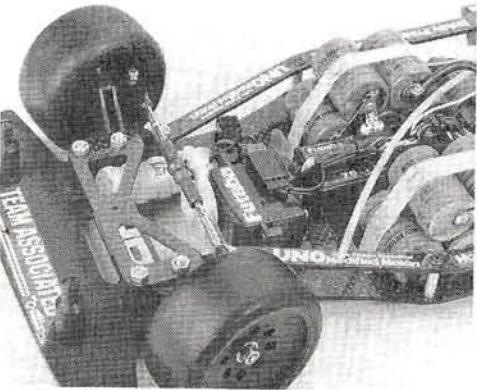
Earning the title of "The World's Fastest R/C Car" takes a lot of preparation. The car has to have a near-perfect combination of power and handling, and the driver must be able to pilot his (or her, as 4th-place finisher Sally Ham proved) sometimes unwieldy road rocket at speeds that approach 100mph on the straights. The slightest glitch can send the car careening into the boards—dashing not only the driver's hopes of setting a record but also his car!

Gary Hamilton found the right combination. He started out with a Team Associated\* RC10L, and he modified it for all-out speed.

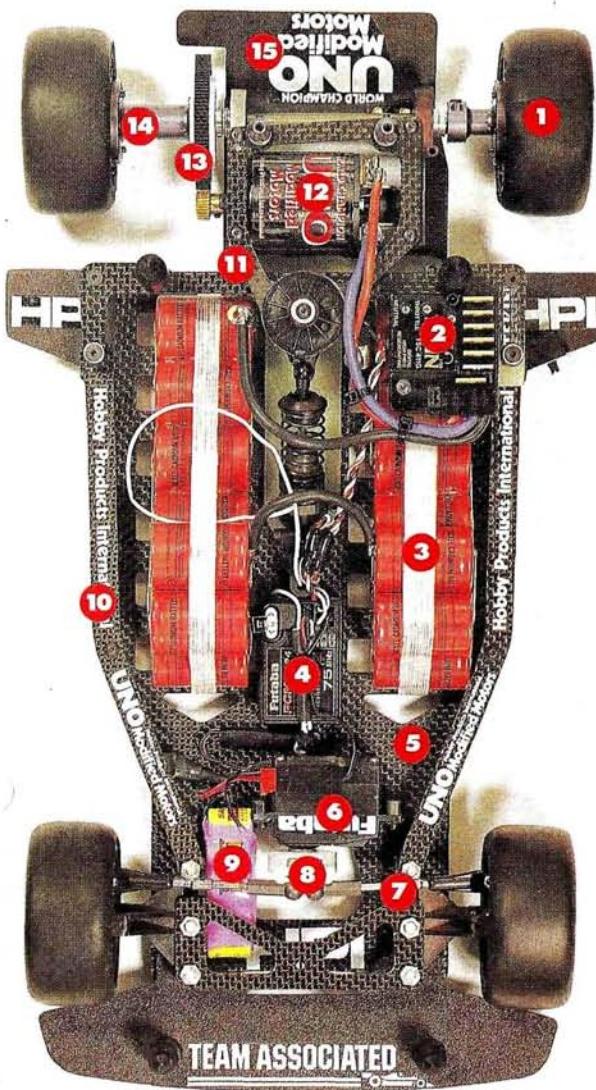
### CHASSIS

Gary replaced the 10L's chassis with HPI's\* 10L SS Insane Chassis and Insane Chassis Brace. The high-quality graphite chassis is more rigid than the stock chassis, and it's also slightly longer, so it lengthens the car's wheelbase and improves high-speed stability. The upper brace is designed to keep flexing to a bare minimum, and this allows the suspension to do its job. Also, if the chassis flexes because of the extreme gravitational forces that act on the car on a high-speed, banked turn, it will scrape, and this will reduce speed.

Gary used the 10L's standard front suspension, but he added an HPI Pro Arm Brace to tie the suspension arms together and prevent them from flexing.



Gary Hamilton used the RC10L's front suspension, but he strengthened it with HPI's Front Arm Brace. The HPI graphite chassis and upper brace provide a strong "backbone" for Hamilton's Insane Run car.



1. TRC Pro-Lite radial tires
2. Tekin 411G ESC
3. Team Ballistic 1000mAh Sanyo SCR batteries
4. Futaba 1024 PCM receiver
5. HPI RC10L SS Insane Chassis
6. Futaba S132H servo
7. Tecnacraft titanium tie rods
8. Kimbrough servo-saver
9. PTI mini-receiver pack
10. HPI RC10L SS Insane Chassis Brace
11. HPI Pro Upper Pod Brace
12. HPI '92 Insane Speed Run 12-turn, single-wind motor
13. Kimbrough 64-pitch spur gear
14. HPI Pro Lite Hub Set
15. HPI Aero Lower Pod Brace

### REAR POD AND SUSPENSION

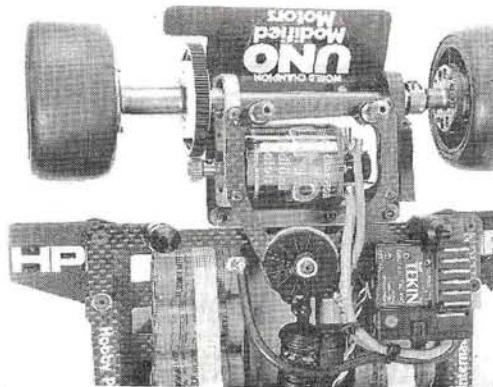
Gary then added HPI's Aero Lower Pod Brace and Pro Upper Pod Brace. The lower brace's rear portion has been kicked up approximately 30 degrees to increase the car's aerodynamic efficiency, and it extends outward to protect the spur gear from rear-end collisions. The Pro Upper Brace replaces the stock piece and is made of the same high-quality graphite as the HPI chassis. The upper brace has small holes in it that trap lubricant under the damper washers like a reservoir, but Gary chose instead to use HPI's Teflon Damper Tape. He applied the tape to the upper brace where it contacts the damper washers. According to Gary, the Teflon tape provides smoother, more consistent damping than the silicone damper lube does.

Gary installed an HPI Rear Chassis Brace that, with the Insane Chassis Brace, stiffens the chassis further. The rear brace also strengthens the damper post and prevents the chassis from flexing from side to side.

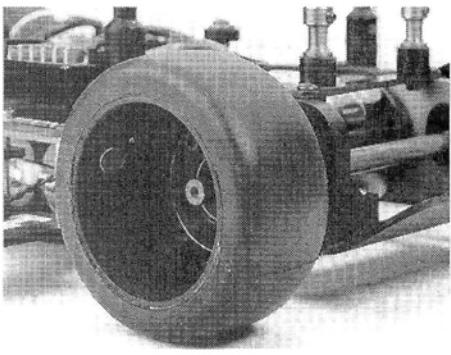
Gary replaced the original 10L axle with a True Turn\* hard-anodized aluminum rear axle and modified the stock diff with a Kimbrough\* 64-pitch spur gear and HPI carbide diff balls. He added HPI's Pro Lite rear hubs to reduce the driveline's rotating mass.

### MONDO HORSEPOWER

Gary controlled his record-setting car with Futaba's\* 1024 PCM system. With its broad



Gary used HPI's Pro Upper Pod Brace and Aero Lower Pod Brace to bolster the strength of the rear pod. An HPI UNO modified motor—built especially for the Insane Run—receives the battery's power through a Tekin 411G ESC.



**TRC's Pro-Lite radial tires have styrofoam cores and a special seam design that allows them to survive super-high speeds. Their light weight also reduces the rotating mass of the car's driveline.**

transmitting range and pulse code modulation (PCM), this radio is ideal for big tracks such as the 1250-foot Velodrome.

For power, Gary used 16 1000mAh Sanyo SCR cells from Team Ballistic\* Batteries. These cells are smaller and weigh much less than the commonly used sub-C cells, but they provide the same voltage. Capacity is diminished, but run time isn't the goal in the Speed Run! These "mini-cells from Hell" routed their power to a Tekin\* 411G Gold FET ESC.

#### ASSOCIATED

Narrow Jaguar body

#### FUTABA

1024 PCM radio system  
S132H servo

#### HPI

6215 RC10L SS Insane Chassis  
6216 RC10L SS Insane  
Chassis Brace  
6025 Pro Arm Brace  
6015 Aero Lower Pod Brace  
6020 Pro Upper Pod Brace  
6212 Teflon Damper Tape  
6213 Carbide Diff Balls  
6145, 6155 Pro Lite Hub Set  
8006 Rear Chassis Brace  
'92 Insane Speed Run 12-turn  
single-wind motor  
7100 Flat-type wing  
6090 Wing mounts

#### KIMBROUGH

64-pitch spur gear  
Servo-saver

#### PTI

Mini-receiver pack

#### TEAM BALLISTIC

1000mAh Sanyo SCR batteries

#### TEKIN

411G electronic speed controller

#### TRC

Pro-Lite radial tires  
(Pro-Lite narrow rears)

#### TRUE TURN

Hard-anodized aluminum rear axle

#### TECNACRAFT

Titanium tie rods

## PARTS

To complete an Insane Run without blowing up, a motor must have especially strong magnets. The incredible voltage of the cells and the immense load placed on the motor can cause the magnets to lose their strength; if this happens, you're in trouble! Hamilton used HPI's '92 Insane Speed Run motor. This 12-turn, single-wind motor was specially tuned to yield a super-high power reading on the LAVCO\* Pro Dyno, which HPI motor man Dave Kisbey uses for testing.

#### BITS AND PIECES

A Futaba S132H steering servo, connected to the front tires by a Kimbrough servo-saver and Tecnacraft\* titanium tie rods, kept the car "on track" at high velocity.

To ensure that all the precious voltage reached the motor, Gary used a mini-receiver pack from PTI\* (made up of tiny 50mAh NiCd's).

I'm not sure how many rpm a 1/10-scale tire is turning when it travels at speeds greater than 80mph, but judging by the number of destroyed capped tires I saw at the Thunderdrome, the answer must be plenty. Gary used a full set of TRC's\* Pro-Lite, styrofoam-core radial tires. Their special cap design puts the seam in a "low stress" area so the tire is less likely to fly apart.

Finally, an Associated narrow Jaguar body—just like the one used by Clausen during the '91 Thunderdrome—adorned Hamilton's car. An HPI "Flat" wing, mounted with the company's wing-mounting kit, provided the necessary downforce and stability.

#### IS THE SOUND BARRIER NEXT?

The number of Insane Speed Run entrants at the Thunderdrome increases every year. If this type of racing becomes popular enough, perhaps we'll see speed runs at tracks across the country, and more manufacturers will design products especially for all-out speed.

Congrats to Gary Hamilton and Team HPI for their incredible run. Anyone wanna try for 90mph?

\*Here are the addresses of the companies mentioned in this article:

**Associated Electrics Inc.**, 3585 Cadillac Ave., Costa Mesa, CA 92626.

**HPI**, 22600-C Lambert St., Ste. 904, El Toro, CA 92630.

**True Turn Racing Products**, 3333 Harrison Ave. #5, Riverside, CA 92503.

**Kimbrough Products**, 1420 E. St. Andrews Pl., Unit F, Santa Ana, CA 92705.

**Futaba Corp. of America**, 4 Studebaker, Irvine, CA 92718.

**Ballistic Batteries**, 11862 Balboa Blvd., Box 345, Granada Hills, CA 91344.

**Tekin Electronics**, 940 Calle Negocio #140, San Clemente, CA 92673.

**LAVCO USA**, 3150 E. La Palma, Unit B, Anaheim, CA 92806.

**Tecnacraft**, 1335E Dayton St., Salinas, CA 93901.

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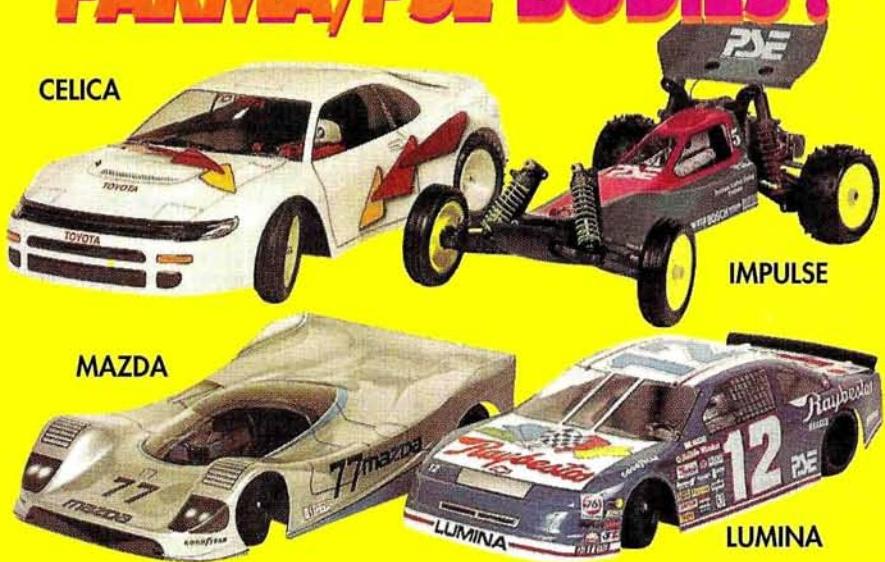
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## KYOSHO RENAULT F1

(Continued from page 118)

though, it fits perfectly and stays put.

The finished car has no competition in  $\frac{1}{10}$  scale. Everywhere I take it, people ask me about it. It looks like a movie prop, and it's a blast to drive. Its size makes it feel much more realistic than a  $\frac{1}{10}$ -scale car.

The wide foam tires grip well, and the car's low center of gravity prevents it from flipping. Its handling gives you a good feel for the agility of the full-size F1 cars.

The Kyosho Williams FW14 is more expensive than its  $\frac{1}{10}$ -scale cousins, but F1 fans—and anyone who likes a challenging kit or a beautiful car—would be crazy not to want one.

\*Here are the addresses of the companies mentioned in this article:  
**Kyosho/Great Planes Model Distributors**, P.O. Box 9021, Champaign, IL 61826.  
**Futaba Corp. of America**, 4 Studebaker, Irvine, CA 92718.■

## LETTERS

(Continued from page 8)

servo for its steering. I'd like to use an Airtronics servo in my RC10. I use a Magnum Junior with a stock receiver and would appreciate any information you could give me.

RYAN McGUIRE  
Allentown, PA

Ryan, when I opened your letter, I was on the phone with Rich Boomsma, Kunio's partner in crime at A-Main Racing. He helps Kunio with his projects, and this is what he told me.

"Kunio runs an Airtronics servo with his Futaba receiver. He reconfigures the wire arrangement so that the Airtronics plug will work with that receiver. All you have to do to run an Airtronics servo with a Futaba receiver is change the red wire on the servo with the wire in the center."

(Continued on page 141)

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## LETTERS

(Continued from page 132)

Or, you could buy a universal receiver plug set from Novak Electronics. With it, you can mix and match just about any servo/receiver combination out there.

JH

### THE DIFFERENCE IS...

I just finished reading your article about the Competition Electronics Turbo Thirty (May '92). I've seen ads for their 30A Turbo Matcher. What's the difference between the two? Can the Turbo Matcher detect motor-current draw? Can it perform the same charging functions as the Turbo Thirty?

J.D. HODGES, II  
Winona, MO

*J.D., here's the story. The Turbo Matcher is strictly a battery-matching machine. It handles six cells at a time, and that's it. The Turbo Thirty only matches single cells at a time, but it has a ton of other features. It can charge and discharge, cycle packs, break-in motors and brew coffee! Well, maybe not the coffee part.*

*The Turbo Thirty is the unit that detects current draw, not the Turbo Matcher. The*

(Continued on page 142)

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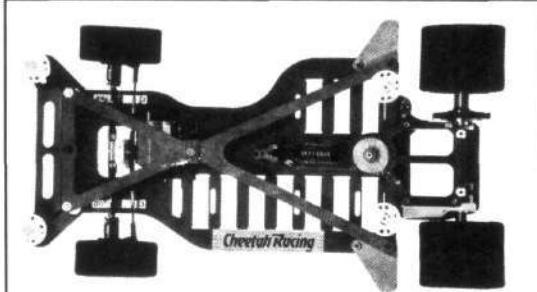
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## LETTERS

(Continued from page 141)

*Turbo Thirty displays the voltage going to the motor, as well as the time the motor has been running. You could also set it to run your motor for a certain amount of time. The voltage can be preset, too. The feature list goes on and on and on.*

JH

## MOUNTAIN MAN

I was looking through my latest copy of *Car Action* and saw that Great Northern Hobbies is selling the Tamiya Mountaineer. Is it a new version of the Bruiser?

Also, I've been considering buying a Bolink Radical Ranger sport truck. Is this a good beginner's on-road truck, or should I buy a more expensive one? I may eventually race with it.

TIM FITZRANDOLPH  
Highlands Ranch, CO

*Tim, the Tamiya Mountaineer is a "cosmetically" updated version of the original Bruiser, but there aren't too many changes.*

*The Radical Ranger Sport is a good truck, and I wouldn't necessarily label it a "beginner's" truck. It's based on the '91 Sport chassis, and yes, if you save your money and buy a different body for it, you can race with it.*

JH

# Track Directory

**PRO-LINE**

## YOUR 1993 TRACK GUIDE

### ALABAMA

Dixie R/C Speedway, Rt. 10, Box 210, Gadsden, AL 35901; Craig Reynolds, (205) 442-1059



Fleming's R/C Raceway, 169 Raceway Dr., Wellington, AL 36279; Phil Fleming, (205) 820-6269



Main Street Raceway, 156 Main St., Trussville, AL 35173; Paul Spivey, (205) 655-3868



Oak Mountain Raceway & R/C Club, 2624 Janice Circle, Birmingham, AL 35235; Will Barrett, (205) 856-7051



Performance R/C Hobby, 2600 A Bellline Rd., Decatur, AL 35603; Ray & Debra Steen, (205) 353-3399



Piedmont R/C Superspeedway, 41 Jewel Lane, Oxford, AL 36203; Terry Young or Greg Gaines, (205) 831-2986 or 831-1666



R/C Hi-Tech Raceway, 3303 Meridian St., Huntsville, AL 35811; Rick Chambers, (205) 539-1347



Satellite Hobbies, 2799 Rose Rd., Albertville, AL 35950; Troy or Jerry Smith, (205) 878-2526



Spring Cove Speedway, Rt. 1, Box 95, Florence, AL 35630; Chuck or Lyda Sypolt, (205) 757-5998



### ALASKA

ARCORR, 2812 Spennard Rd., Anchorage, AK 99503; Jim Raftuse, (907) 277-7778



McKinley Hobby & Raceway, 2300 McKinley Dr., Wasilla, AK 99654; (907) 376-9351



Seth's Speedways, 3400 Hiland Dr., Anchorage, AK 99504; Seth Graham, (907) 337-3777



Southtown Hobby & Raceway, 12001 Industry Way #2, Anchorage, AK 99515; Bob or Vickie Peters, (907) 345-3131

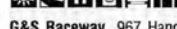


### ARIZONA

Economy One-Stop Raceway, 4000 S. 4 Ave., Yuma, AZ 85366; (602) 344-3514



Finish Line Raceway, 7025 E. 21st St., Tucson, AZ 85710; Jerry Kikkert, (602) 747-3633



G&S Raceway, 967 Hancock, Bullhead City, AZ 86442; Bob Olsen, (602) 758-1100



Havasu R/C Raceway, 1081 Desert View Dr., Lake Havasu City, AZ 86403; Bernie Coates, (602) 680-6304



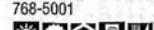
HobbyTown Raceway, 9180 E. Indian Bend Rd., Scottsdale, AZ 85250; Dennis, (602) 948-3946



HobbyTown Raceway, 1915 East Baseline Rd., Gilbert, AZ 85234; Kenny, (602) 892-0405



Outlaw Raceway, 5309 Lakewood Rd., Ft. Mohave, AZ 86427; Frank Greely, (602) 768-5001



R/C Raceplex, 5222 W. Glendale Ave., Glendale, AZ 85301; Bill Murray, (602) 934-5567



R/C Sports Mania, 3550 N. 35th Ave., Phoenix, AZ 85017; (602) 996-4668



Race Prep Raceway, 852 S. Hwy. 89, Chino Valley, AZ 86323; Mike Dunn, (602) 636-1955



Scale Racing Sports, 1120 N. Hayden Rd., Tempe, AZ 85281; Mike, (602) 829-9117



Sierra Vista Raceway, 105 N. Central Ave., Sierra Vista, AZ 85635; Wayne Tuthill Sr., (602) 459-1335



Speedway Hobbies, 1000 N. Humphreys St., #204, Flagstaff, AZ 86001; Gary McAllister, (602) 556-0710



### ARKANSAS

AERCC, Vimy Ridge Rd., Little Rock, AR; (501) 945-7037



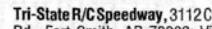
Arkansas Int'l. Superspeedway, P.O. Box 1636, Pine Bluff, AR 71613; Joe Pitts, (501) 247-2371



DCA Racing, 412 Hiway & 14th St., Paragould, AR 72450; Lyle Spillman, (501) 236-9706



Ozark Hobby Shop, 702 S. 2nd, Rogers, AR 72756; Joe Talariski, (501) 631-6871



Tri-State R/C Speedway, 3112 Cavanaugh Rd., Fort Smith, AR 72903; Village R/C Hobbies, (501) 646-3701



### CALIFORNIA

AppleTree Raceway, 1303 Hermosa Ave., Pacifica, CA 94044; Sonny Day, (415) 359-9755



ARO Hobbies Raceway, 24275 Sunnymead, Moreno Valley, CA 92553; George or Mike Kileen, (714) 924-3240



Art & Dean Raceway, 29409 Haguest, Lake Elsinore, CA 92530; Art, (714) 245-0920



Bob & Jim's R/C World, 3485 University Ave., Riverside, CA 92501; Bob Parcel, (714) 684-6314



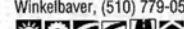
Brake-a-way Raceway, 3179 Hammer Ave., Norco, CA 91760; Debbie Burrie, (714) 736-6063



California Auto Racers (CAR), 96 San Tomas Aquino Rd., Campbell, CA 95008; Club Message Line, (415) 508-9971



Cats West Raceway, 5631 Old Lonetree Way, Antioch, CA 94509; Jerry Winkelbauer, (510) 779-0505



City Speedway, 7750 Convoy Ct., San Diego, CA 92111; (619) 560-9633



Cloverdale R/C Raceway, 1 Citrus Fair Dr., Cloverdale, CA 95425; Tom Kelley, (707) 586-9789



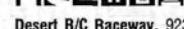
Covina Racing Company, 1611 W. San Bernardino Rd., Covina, CA 91722; Tom, (818) 331-4984



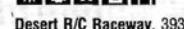
Cycle Art Raceway, 2211 N. Pleasant Way, Fresno, CA 93705; Richard De Benedictis, (209) 233-3665



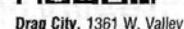
D&D Raceway, 290 S. First St., Turlock, CA 95380; Dave Miller, (209) 667-0970



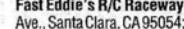
Desert R/C Raceway, 9231 E. Hobson Way, Blythe, CA 92225; Rodney Lazenby, (619) 922-5516



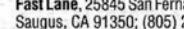
Desert R/C Raceway, 39360 3rd St. E., Ste. 305, Palmdale, CA 93550; (805) 272-1835



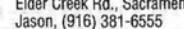
Drag City, 1361 W. Valley Blvd., Colton, CA 92324; Chris Gabriel, (714) 370-0580



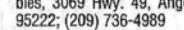
Fast Eddie's R/C Raceway, 3261 Edward Ave., Santa Clara, CA 95054; Eddie Aflague, (408) 986-8256



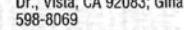
Fast Lane, 25845 San Fernando Rd., #21, Saugus, CA 91350; (805) 255-2404



The Finest R/C Off-Road Circuit, 8711 Elder Creek Rd., Sacramento, CA 95820; Jason, (916) 381-6555



Frogtown R/C Raceway, Motherlode Hobbies, 3069 Hwy. 49, Angels Camp, CA 95222; (209) 736-4989



Gina's R/C Palace, 1839 Olympus Loop Dr., Vista, CA 92083; Gina Garner, (619) 598-8069



Greater Los Angeles R/C Racing Club, California State University, Parking Lot A, Los Angeles, CA 90045; Glenn Williams, (213) 734-7888 or Tom Wong, (310) 821-5472



Hayes Raceway, 628 Walnut Ave., Patterson, CA 95363; Andy Hayes, (204) 892-5080



Hobby Haven Raceway, 3983 First St., Livermore, CA 94550; Tom Welding Jr., (510) 443-5828



Hobbycrafters Raceway, 323 Five Cities Dr., Pismo Beach, CA 93449; (805) 773-6765



Hobbytown Raceway, 1330 Keystone Way, Vista, CA 92083; Bryan Bahmann, (599) 0456



Hobby Warehouse, 5500 So. Watt, Sacramento, CA 95828; Roger Hubbard, (916) 381-7587



Jackman's R/C Raceway, 1616 N. Beale Rd., Marysville, CA 95901; Bonnie or Harry Jackman, (916) 741-3744



Jones R/C Track, Riverside, CA 92505; Dustin Biber, (714) 689-6808



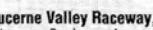
K&M R/C Raceway, 22474 A Barton Rd., Grand Terrace, CA 92324; Mike Blake, (714) 783-0899



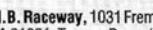
The Land of R/C, 2717 Gerber Road, Suite B, Woodland, CA 95695; Le Forrest, (916) 666-1699



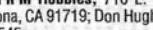
Lindsey's R/C Raceway, P.O. Box 443, Doyle, CA 96109; (916) 827-2457



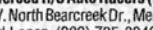
Lucerne Valley Raceway, 32800 #4 Old Woman Springs, Lucerne Valley, CA 92356; Frank Rodriguez, (619) 248-7305



M.B. Raceway, 1031 Fremont, Alhambra, CA 91801; Tony or Dave, (818) 284-4198



M'n'M Hobbies, 710 E. Parkridge, Corona, CA 91719; Don Hughes, (714) 272-3545



Merced R/C Auto Racers (MRCAR), 1652 W. North Bear Creek Dr., Merced, CA 95348; Ed Lopez, (209) 725-8040



My Hobby Shop, 1525 Farmers Ln., Santa Rosa, CA 95405; Mike, (707) 571-1700



One-Stop Raceway, 3782 Cerritos Ave., Los Alamitos, CA 90720; (213) 493-7597



Outlaw R/C Hobbies, 7920 Webster, Highland, CA 92346; Rick James, (909) 864-1770



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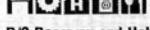
Paso Robles R/C, P.O. Box 3795 (3980 Linne Rd.), Paso Robles, CA 93447; (805) 237-0624



Perris Recreation/R/C Track, 120 N. Perris Blvd., Perris, CA 92370; Len or Fay Shirley, (714) 943-6603 or 657-4879



R/C Off-Road Raceway, 10810 Talbert Ave., Fountain Valley, CA 92708; Jeff Paul or Bob Flege, (714) 965-9615



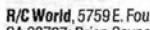
R/C Raceway and Hobbies, 1453 North Milpitas Blvd., Milpitas, CA 95035; Tom or Bonnie Grader, (408) 262-3188



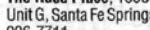
R/C Racing Center, 9842 Channel Rd., Lakeside, CA 92040; Russ or Cindy, (619) 443-2270



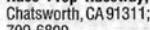
R/C Sports, 759 E. Monte Vista Ave., Vacaville, CA 95688; (707) 446-5555



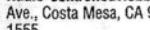
R/C World, 5759 E. Fountain Way, Fresno, CA 93727; Brian Gaynor, (209) 348-9409



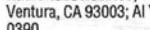
The Race Place, 13564 E. Imperial Hwy, Unit G, Santa Fe Springs, CA 90670; (213) 926-7711



Race Prep Raceway, 20115 Nordhoff, Chatsworth, CA 91311; Steve Dunn, (818) 709-6800



Radio-Controlled Hobbies, 2011 Placentia Ave., Costa Mesa, CA 92630; (714) 631-1555



Radiowave Hobbies, 4572 Telephone Rd., Ventura, CA 93003; Al Young, (805) 642-0390



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Ranch Pit Shop, 1655 E. Mission Blvd., Pomona, CA 91766; Billy Bowferman, (714) 623-1506



Rick's R/C Speedway, 217 3rd St., Eureka, CA 95501; Rick Hynard, (707) 445-3341



RnR Hobbies, 701 E. Ave. I, Lancaster, CA 93534; Robert or Ron, (805) 949-1552



Robin's Racing World, 1844 W. Glenoaks, Glendale, CA 91201; (818) 240-2093



Roy's Raceway, 368 E. 11th St., Tracy, CA 95516; (209) 836-3513



RP Hobbies, 6650 Commerce Blvd. 21, Rohnert Park, CA 94928; (707) 586-3375



Sacramento Mini-Wheels Raceway, 8711 Elder Creek Rd., Sacramento, CA 95828; Paul Schiager, (916) 383-4011



San Diego R/C Car Club, P.O. Box 232456, San Diego, CA 92193; (619) 560-0089



Square Roundhouse R/C Speedway, 1468 Lander Ave., Turlock, CA 95380; (209) 668-4454



SRS Raceway, 915 N. Main St., Salinas, CA 93906; (408) 424-4044



Tyler's RC/RD Racing Center, 6865 Flanders #D, San Diego, CA 92121; (619) 597-3072



Valley R/C Race Park, 146 S. Santa Fe St., Hemet, CA 92344; Valley Wide Recreation, (714) 654-1505 or 658-4322



Ventura Road Runners/Freedom Park Raceway, 520 Freedom Park, Camarillo, CA 93010; Lee Abramson, (805) 484-8920 or Ed Haney, (805) 499-8266



White Mountain R/C Raceway, 174 West Line, Bishop, CA 93514; (619) 872-1599

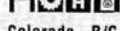


Yorba Linda R/C Speedway, 3780 Prospect #B, Yorba Linda, CA 92685; David Landier, (714) 572-2175



## COLORADO

Action R/C Raceway, 4939 N. Broadway #57, Boulder, CO 80304; (303) 440-0330



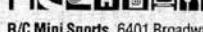
Colorado R/C Speedway, 6520 Wadsworth Blvd. #130, Arvada, CO 80003; (303) 425-1718



MHOR R/C Raceway, 15540 E. Batavia Dr., Aurora, CO 80011; Jess Brockman, (303) 343-0151



Miracle R/C Speedway, 4206 Wadsworth Blvd., Wheatridge, CO 80034; Rob Grossman, (303) 420-3051



R/C Mini Sports, 6401 Broadway, Unit G, Denver, CO 80223; Bernie Stolzman, (303) 650-2500



R/C World & Track, 2788 S. Federal Blvd., Denver, CO 80236; (303) 789-0838



Rocky Mountain R/C Raceway, 5737 Constitution Ave., Colorado Springs, CO 80915; Lee Seigel, (719) 550-1777



## CONNECTICUT

Craftech Raceway, Navsubase NLLON Box 14, Bldg. 460, Groton, CT 06349; Dave or Tony, (203) 449-3217



High-Tech Raceway, 375 Enfield St., Enfield, CT 06082; (203) 745-8488



Hobby World Raceways, 161-6 Woodford Ave., Plainville, CT 06062; (203) 793-1111



JP's Hobbies & Track, 54 Wakelee St. Ext., Seymour, CT 06483; (800) 547-5772



K/N/R C/Speedway Inc., West St., Stafford Springs, CT 06076; (203) 684-9896



NERCAR, 36 Glendale Rd., Enfield, CT 06082; Phil Olsson, (203) 627-5410



R/C Madness, 640 Enfield St., P.O. Box 64, Enfield, CT 06082; Christopher Marcy, (203) 741-6501



R/C Raceways Inc., 1265 John Fitch Blvd., South Windsor, CT 06074; (203) 528-3661



R/C World/Sugar Hollow Speedway, 66 Sugar Hollow Rd., Danbury, CT 06810; (203) 748-2185



SCORA/Clayton's Off-Road Racing, 141A Middletown Ave., North Haven, CT 06473; Craig or Keith, (203) 234-CLAY



Wallingford Indoor Racing, 63 N. Cherry St., Wallingford, CT 06492; (203) 265-3939

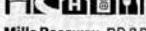


## DELAWARE

Hobby Works Raceway, Hamlet Shopping Center, Dover, DE 19901; Steve or Gordon, (302) 674-9123



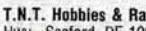
Kennedy's Hobby Shop & East Coast Raceway, 311B West Dupont Hwy., Millisboro, DE 19966; Russ & Betty Jo Kennedy, (302) 934-1708



Mills Raceway, RD 2 Box 83D-8, Milford, DE 19963; Mike Roe, (302) 422-6766



T&C Raceway, Rt. 113 South, Georgetown, DE 19947; Sam Thompson Jr., (302) 856-3804



T.N.T. Hobbies & Raceway, 609 Stein Hwy., Seaford, DE 19973-0464; Thorpe Shatney, (302) 628-0520



## FLORIDA

B+T R/C Central, 811 Playground Rd., Ft. Walton Beach, FL 32547; (904) 863-2666



Barry's R/C Raceway, 2701 SW College Rd. #603, Ocala, FL 32674; Barry Lees, (904) 237-4400



Branford R/C Speedway, Rt. 3, Box 240, Branford, FL 32008; (904) 935-0758



Challenger Speedway at the Willows, Willows Park & Okeechobee Blvd., Royal Palm Beach, FL 33414; Walt, (407) 965-2790 or Mark, (407) 790-6917



Coral Springs Roadrunners, P.O. Box 9632, Coral Springs, FL 33075; Tom Allison, (305) 721-0344 or Rick Schwartz, (305) 344-1983



Doc's Indoor R/C Raceway, 16803 US 19N, Clearwater, FL 34624; Steve "Doc" Wacholz, (813) 824-7702



Fl. Lauderdale R/C Speedways, 2201 NW 9th Ave., Mills Pond Park, Ft. Lauderdale, FL 33314; Jack or Diane Koons, (305) 424-6617



First Coast International Speedway, P.O. Box 1342, Jacksonville, FL 32201-1342; Bob Thompson, (904) 743-2161



Greater Orlando Auto Racers, 970 Keller Rd., Altamonte Springs, FL 32714; Dave Motin, (407) 293-7090



H&H Raceway, 4121 S. Tamiami Tr., Sarasota, FL 34231; (813) 922-7711



Hialeah Hobby Raceway, 4562 W. 12 Ave., Hialeah, FL 33015; (305) 826-3702



Hobby Shop Speedway, 4805 Hwy. 22, Panama City, FL 32404; Larry Pollock, (904) 763-4599



JARCAR Raceway, 7273 103rd St., Jacksonville, FL; Rob Kruse, (904) 272-6315



Kenny's Track & Hobby, 11125 U.S. 41 South, Gibsonton, FL 33534; Kenny Ryals, (813) 671-9123



Lake Whippoorwill International Speedway, 12345 Narcoossee Rd., Orlando, FL 32827; Bob Hosch, (407) 277-9586; fax (407) 277-2568



Lou's R/C Hobbies & Raceway, 1512 SE Village Green Dr., Port St. Lucie, FL 34952; (407) 337-9000



M&M/R/C Raceway, 16921 Waterline Rd., Bradenton, FL 34202; Mike Williams, (813) 747-2889



Martin County Championship R/C Speed-way, 2953 S.E. Ellendale St., Stuart, FL 34997; Jerry Landry, (407) 220-1816



McBiffy R/C Raceway, 3rd St., Center, Cedar Key, FL 32625; Wilbur McBiffy, (904) 543-5628



West Coast R/C Club, Lake Park, 17203 N. Dale Murr, Tampa, FL 33549; Tim O'Daffer, days, (813) 969-3683; evenings, (813) 239-9630



Wilbur Avenue Raceway, 1848 Wilbur Ave., Vero Beach, FL 32960; (407) 567-1200



Case R/C Raceway, P.O. Box 1061, Trenton, GA 30752; (404) 657-6789



Victory Speedway, 5416 Anna St., Boise, ID 83705; Bruce Wallace, (208) 343-3113



Ocala R/C Car Club, P.O. Box 70166, Ocala, FL 32670; Larry E. Mitchell, (904) 245-2609; Steve Shook, (904) 694-5147



Oceanside Raceway, 206 E. Eau Gallie Blvd., Indian Harbour Beach, FL 32937; Michael Kelly, (407) 242-0434



PBG R/C Motor Park, 6351 Barbara St., Palm Beach Gardens, FL 33410; Doug Gleason, (407) 743-9791



Performance Plus Raceway, 2820 SE 62 St., Ocala, FL 34481; Charlie Floyd or Cari Ross, (904) 867-5557



Pro Hobbies Speedway, 715 N. Lake Pleasant Rd., Apopka, FL 32712; (407) 866-4615



R/C Action, 646 Choy Lee Circle, Orlando, FL 32708; (407) 695-6746



Raceway Hobbies, 1115-J Enterprise Ct., Holly Hill, FL 32117; (904) 258-7537



The Racer's Edge, 1530 Hwy. 19 N., Thomaston, GA 30286; Roger or Mark Walls, (706) 648-2637, (706) 648-6534



Sandy Cross Speedway, Rt. 1, Box 1073, Royston, GA 30662; Morris Phillips or Wayne Fowler, (404) 245-9573



Silver Wings Raceway, 5611 Riverdale Rd., College Park, GA 30349; (404) 991-2225



Sugar Bowl R/C Speedway, 5272 North Ave., Sugar Hill, GA 30518; Shelley or Jan Bailey, (404) 945-6709



The Hobby Habit, c/o 70 Kaahumanu Ave., Kahului, Maui, HI 96732; Blaine or Teri Ferreira, (808) 871-6666



K/M's Hobbies, 2305 Jasmine St., Honolulu, HI 76816; George Mirikirana, (808) 757-7135



Koha R/C Racing, 74-5563 Kaiwi St., Kailua-Kona, HI 96740; Hobby-Tronics, (808) 329-3072



R/C Motorsports Hawaii, 98-029 Hekaha St., Aiea, HI 96701; Lane Petrich, (808) 487-5155



Team PRC Racing Club, Pahoa Government Rd., Pahoa, HI 96778; Charlie Kawamoto, (808) 965-8216



Capital Dirt Burners, 1945 N. Teare Ave., Meridian, ID 83642; Jim Brandon, (208) 888-7079



Dapco Hobbies, 2211 Garrett Way, Pocatello, ID 83201; Pat Talbert, (208) 233-8163



Falls Hobbies & R/C Raceway, 1515 Northgate Mile, Idaho Falls, ID 83401; (208) 529-8650



Victory Speedway, 5416 Anna St., Boise, ID 83705; Bruce Wallace, (208) 343-3113



GEORGIA

Carnesville R/C Speedway, Rt. 2, Box 2354, Carnesville, GA 30521; Bobby Maxwell or Byron Sartain, (404) 384-4870 or 384-4587



Miami Speedway, 7805 NW 148th St., Miami Lakes, FL 33014; Julio Romero, (305) 687-6728



Case R/C Raceway, P.O. Box 1061, Trenton, GA 30752; (404) 657-6789



## ILLINOIS

**Adam's Blast Track**, RR 1, Box 370, Ashmore, IL 61912; John Deffenbaugh, (217) 349-8447



**AJ's Raceway**, Kesslinger Road, Dekalb, IL 60115; AJ Schultz, (815) 756-2772



**Ameri-Trac**, R3, Box 242, Mattoon, IL 61938; (217) 234-8707



**Badlands II**, 320 W. Jackson St., Vandalia, IL 62471; (618) 283-2913



**BARR**, 809 River Dr., Byron, IL 61010; Jim Haynes, (815) 234-5615



**C&R Hobbies**, 39 E. Jones, Milford, IL 60953; Ray Craighead, (815) 889-4073



**Centennial Park/LeMont Dirt Burners**, 7827 Rohrer Dr., Downers Grove, IL 60516; Scott Moravik, (708) 968-6411



**Central Illinois R/C Car Club**, contact Ron Buhl, 109 Oliver N., Pekin IL 61554; (309) 382-2591 or Randy House, 510 S. 10th, Pekin, IL 61554; (309) 347-4912



**Central R/C Raceway**, RR 2, Box 51-A, Carlinville, IL 62626; Tim Stewart, (217) 854-9718 or Don Rice, (217) 854-3785



**Diehard R/C Raceway**, 300 N. Main, Kewanee, IL 61443; Dick Jennings, (309) 852-3700



**Eagle Speedway**, 303 N. Plum, Pontiac, IL 61764; Joe or Vickie Bachman, (815) 842-1738



**Hobby Raceway**, 5027 4th Ave., Moline, IL 61265; Tony, (309) 755-5534



**Hobby Town Raceway**, 4611 W. Rt. 120, McHenry, IL 60050; Mike Hollingsworth (815) 344-1777



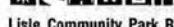
**JC Hobbies/Metro Motor Speedway**, Metropolis Airport, Metropolis, IL 62960; (618) 524-9979



**JMP Raceway**, 952 Harrison Ave., Wood River, IL 62095; (618) 258-0297 or -0282



**Leisure Hours Hobbies**, 2872 Plainfield Rd., Joliet, IL 60435; (815) 439-1477



**Lisle Community Park Raceway**, 1825 Short St., Lisle, IL 60532; Jim Bernicky, (708) 416-6944



**M&E Hobbies & Raceways**, 300 N. Milwaukee Ave., Lake Villa, IL 60046; Mark Kaye, (708) 356-3224



**Machesney Park**, 1220 Shappert Dr., Machesney Park, IL 61111; (815) 282-1311



**Magnum R/C Speedway**, RR #2, Box 399, Danville, IL 61832; Terry & Nancy Dines, (217) 446-2472



**Marty's R/C Hobby**, 1335 E. Broadway, Bradley, IL 60915; Gail or Marty, (815) 933-8441



**Mercer Co. R/C Off-Road**, RR 3 Box 259, Milan, IL 61264; Jamie Wagal, (309) 534-8324



**Midwest Hobby Trax**, 114 Kirkland Cr., Unit A, Oswego, IL 60543; Duane Pierson or John Koonec, (708) 978-RACE



**Monee R/C Raceway**, 26049 Ridgeland Ave., Monee, IL 60449; (708) 534-2422



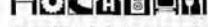
**Peoria R/C Raceway**, 518 Hillsdale Ave., Peoria, IL 61604; Ray Tigue, (309) 672-1780



**Precision Speedway**, 3919 17 St., East Moline, IL 61244; Dan Kennedy, (309) 796-2226



**R/C Speed Zone**, 1400 E. Lafayette, Bloomington, IL 61701; (309) 662-RACE



**The R/C Track**, 15022S. Artesian, Harvey, IL 60426; Edmund Johnson, (708) 331-4079



**Radio Active Raceways**, 751 N. Bolingbrook Dr., #15, Bolingbrook, IL 60440; Jim or Lenny, (708) 759-7557



**Redline Raceway**, 921 Harding, Calumet City, IL 60409; (708) 862-8181



**Rick's R/C Raceway**, 122 W. 12th St., Streator, IL 61364; Rick Wallace, (815) 673-1870



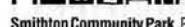
**Rockford Scale Raceway**, 6900 N. 2nd St., Machesney Park, IL 61111; (815) 765-2970



**SIRCAR Raceway**, 1200 N. Marion, Carbondale, IL 62901; (618) 549-5885



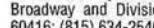
**Slot Wing Hobbies Race Place**, 1615 W. Springfield, Champaign, IL 61821; (217) 359-1920



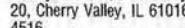
**Smithton Community Park**, P.O. Box 8152, Belleville, IL 62221; (618) 236-7569



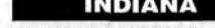
**Superior Raceway**, 1706 W. Bradley, Champaign, IL 61821; (217) 359-8073



**Thunderroad Speedway**, Intersection of Broadway and Division, Coal City, IL 60416; (815) 634-2540



**Valley Farms R/C Raceway**, 706 Bypass 20, Cherry Valley, IL 61016; (815) 332-4516

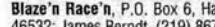


## INDIANA

**Autograph/Race World**, 721 Pendleton Ave., Pendleton, IN 46064; Sam Mudd, (317) 778-3386



**BJ's Riverside Raceway**, 265 S. Clay St., Jasper, IN 47546; Joe Lorey, (812) 482-3484



**Blaze'n Race'n**, P.O. Box 6, Hamlet, IN 46532; James Berndt, (219) 867-1324



**Boone County Raceway**, 1300 E. 100 S., Jasper, IN 46505; Jerri Moss or Allan Luper, (317) 482-4827



**CC Hobby & Speedway**, RR 1, Box 68, Francesville, IN 47946; (219) 567-2447



**Classic Hobbies**, 420 E. Commercial, Lowell, IN 46356; David Scheffler, (219) 696-0649



**County Line R/C**, 2333 W. State Rd. 38, Sheridan, IN 46069; Greg Welch, (317) 758-6393



**Hobby Barn Raceway**, 1950 Springhill, Terre Haute, IN 47082-9694; (812) 299-5773



**The Hobby Prescription**, 115 S. Indiana Ave., Auburn, IN 46706; Roxanne Fike, (219) 925-6699



**Hobby World Raceway & Hobbies**, 1508 N. Harlan, Evansville, IN 47711; Jeff Wassman, (812) 421-1100



**K&L Hobbies & Raceway**, 3275 North 525W, LaPorte, IN 46350; (219) 324-0353



**Main Hobbies**, 625 Columbia, Lafayette, IN 47901; Randy Palmer, (317) 742-2045



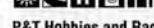
**Master Hobbies**, 8501 Bash Rd., Indianapolis, IN 46250; Tim or Dan, (317) 576-1961



**Mooreville R/C Hobby**, 7 Moore St., Mooresville, IN 46158; (317) 831-8877



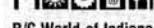
**Mooreville R/C Hobby**, 9201 S. State Rd. 67, Camby, IN 46113; (317) 831-8877



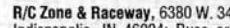
**P&T Hobbies and Raceway**, RR 2 (Hwy 60), Mitchell, IN 47446; Paul Weber, Tom Logsdon, (812) 849-6666; fax, (812) 332-0018



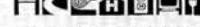
**R/C Barn**, 310 N. 125 W., Monroe, IN 46772; Mark Lengerich, (219) 692-6600



**R/C World of Indiana**, RR #2, Box 335, Lynn, IN 47355; (317) 874-2464



**R/C Zone & Raceway**, 6380 W. 34th St., Indianapolis, IN 46224; Russ or Greg, (317) 290-0067



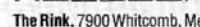
**Race St. Raceway & Hobby**, 1126/2 Race St., New Castle, IN 47362; John or Nancy Strong, (317) 521-4888



**Raceway Park**, 919 E. McKinley, Mishawaka, IN 46545; Bob Bean, (219) 262-2603 or -7864



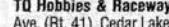
**The Rink**, 7900 Whitcomb, Merrillville, IN 46410; Don Reiner, (219) 769-8113



**Runway Hobbies Raceway**, 5342 Elmwood, St. J., Indianapolis, IN 46203; Randy Hyatt, (317) 784-2421



**TQ Hobbies & Raceway**, 13710 Wicker Ave., (Rt. 41), Cedar Lake, IN 46303; Jack Wilson, (219) 374-9776



**Winner's Circle Speedway**, State Road 10 and 55, Roselawn, IN 46310; Harold Holmes, (219) 987-4106



## IOWA

**Barnyard Raceway**, RR1, Box 243, Plainfield, IA 50666; Fred Good, (319) 276-4825



**Dubuque R/C Speedway**, Dubuque County Fairgrounds, Dubuque, IA 52001; Paul Conlon, (319) 556-2736



**Kodiak Race Track**, Box 78, Okoboji, IA 51355; Brad or Dave, (712) 332-7982



**M&M Racetrack**, 2434 Pilgrim Path, Oskaloosa, IA 52577; (515) 673-6265



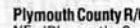
**Marble's Hobby Supply**, 4685 SE 40th St., Des Moines, IA 50320; Rick Marble, (515) 262-7507



**Mr. Car Raceway**, Central Iowa Fairgrounds, Marshalltown, IA 50158; (515) 483-2234



**North Park R/C Speedway**, 805 S. Jerome, Algona, IA 50511; (515) 295-9352



**Plymouth County R/C Speedway**, 4th Ave. NE (Plymouth County Fairgrounds), LeMars, IA 51031; (712) 546-9522



**Power House Racing**, 1200 S. Division St., Creston, IA 50801; (515) 782-4582 or 782-4174



**River City R/C Speedway**, 317 2nd NW, Mason City, IA 50401; Leonard Johnson, (515) 423-7333



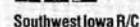
**Rotunda Raceway**, 101 Bass, RR 1, Box 155A, Storm Lake, IA 50588; (712) 732-4555



**Sibley Raceway**, Osceola County Fairgrounds, Sibley, IA 51249; Al Reck (712) 754-2604 (day) or 754-3613 (night)



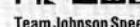
**Southwest Iowa R/C Raceway**, Kelly Park, Red Oak, IA 51566; (712) 623-5513



**Southwest Iowa R/C Raceway**, Montgomery County Fairgrounds, Red Oak, IA 51566; (712) 623-5513



**Spenser R/C Raceway**, 419 Grand Ave., Spenser, IA 51301; Steve or Mike, (712) 262-2603 or -7864



**Team Johnson Speedway**, Jct. Hwy. 34 & 406, West Burlington, IA 52655; (319) 753-0753



## KANSAS

**ACE Raceway**, 325 Commercial, Emporia, KS 66801; Luke Amend, (316) 343-1933



**Chad's R/C World & Raceway**, 217 Brownie Ave., P.O. Box 76, Scranton, KS 66537; (913) 793-2313



**Ebersole R/C Superspeedway**, 11417 W. Hwy. 54, Wichita, KS 67209; Len Ebersole, (316) 722-8888



**Pittsburg International Mini Speedway**, 1/2 N. Locust, Pittsburg, KS 66762; (316) 232-1973



**R/C Superdome & TQ Pro Shop**, 14 E. Ave. A, Hutchinson, KS 67501; (316) 665-6633



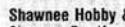
**R/C World & Raceway**, 217 Brownie Ave., Scranton, KS 66537; Corry Green, (913) 793-2313



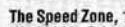
**R&R R/C Raceway**, 900 N. Santa Fe, Salina, KS 67401; (913) 823-7062



**RCR Racetrack**, 507 N. 4th, Atwood, KS 67730; Bob Dunker, (913) 626-3261



**Shawnee Hobby & R/C Raceway**, 4603 Shawnee Dr., Kansas City, KS 66106; Bill Pugh, (913) 384-3211

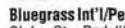


**The Speed Zone**, 12809 Plumm, Olathe, KS 66062; Brian Bierman, (913) 829-5287

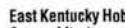


## KENTUCKY

**A&J Raceway**, Hc-64, Box 322-A, Lily, KY 40740; Al Smith, (800) 453-9710



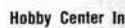
**Bluegrass Int'l/Perry's R/C Hobbies**, 214 Globe St., Radcliff, KY 40160; William Perry, (502) 351-RACE



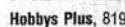
**East Lincoln Hobby Raceway**, Hwy. 15, Garner Mt., Isom, KY 41824; (606) 633-8567



**Fast Lane Hobbies & Raceway**, 281 Porter Pike, Bowling Green, KY 42101; Greg Bailey, (502) 782-2419



**Hobby Center Inc.**, 2106 Triplett St., Owensboro, KY 42303; Bobby Howell, (502) 683-7611



**Hobbys Plus**, 819 Main St., Hazard, KY 41701; Joe Mavar, (606) 436-3175



**The Lexington Autodrome Raceway**, 2753 Richmond Rd., Lexington, KY 40509; (606) 269-7794

# Track Directory

## LOUISIANA

**Acadiana R/C Hobbies & Raceway**, 120 Toledo Dr., Lafayette, LA 70506; (318) 235-5825



**Baha Raceways**, 2225 Hickory Ave., Harahan, LA 70123; Bruce or Dan Rodriguez, (504) 737-6988



**Cajun R/C Raceway**, Rt. 2, Box 288 (Hwy. 343, Bosco) Church Point, LA 70525; Ray Thibodeaux, (318) 873-3855



**Cajun R/C Raceway**, 110 A Darbonne, Sulphur, LA 70663; Sandy Thibodeaux, (318) 527-9129



**Johnny V's R/C Hobby & Raceway**, 1036 W. Airline Hwy., LaPlace, LA 70068; Johnny V or Shawn Adams, (504) 651-9045



**Loupe's R/C**, 888A Madeline Ct., Baton Rouge, LA 70815; Mark Loupe, (504) 927-6275



**Oakdale Raceway**, 1259 Hwy. 165 S., Oakdale, LA 71463; M.L. Jezierski, (318) 335-3532



**Performance Hobby Raceway**, 9135 W. Judge Perez Dr., Chalmette, LA 70044; Guy Trentecosta, (504) 271-2468



**Red River R/C**, 3232 East 70th, Shreveport, LA 71105; Pete Bradford or Ken Adcock, (318) 424-6325 or 929-7378



## MAINE

**Central Maine R/C Speedway**, 18 Lithgow St., Winslow, ME, 04901; David Prescott, (207) 877-2232



**Clay Bowl R/C Hobbies**, P.O. Box 61, Greene, ME 04236; Pat Cap, (207) 946-5003



**Fast Track R/C Raceway**, P.O. Box 247, Gardiner Rd., Sabattus, ME 04280; Raymond Nadeau, (207) 375-4779



**Mementos Hobby Shop**, 86 Sweden St., Caribou, ME 04736; (207) 498-3711



**Rocket R/C Hobbies**, Annabessacook Rd., Winthrop, ME 04364; (207) 377-6910



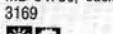
**Sanford Speedway**, 479C Elm St., Biddeford, ME 04005; (207) 282-8838



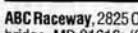
**Team Terminator Off-Road Track**, c/o Hobbies Plus, 479C Elm St., Biddeford, ME 04005; (207) 282-8838



**The Racers' Club**, 85 Hubbard Rd., Berwick, ME 03901; (207) 698-5337



**Wallbanger Heaven**, 50 Elm St., Houlton, ME 04730; Jack Newman, (207) 532-3169



## MARYLAND

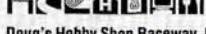
**ABC Raceway**, 2825 Ocean Gateway, Cambridge, MD 21613; (301) 228-4291



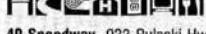
**Bel Air R/C Raceway**, 227G Gateway Dr., Bel Air, MD 21014; Jeff Little, (410) 838-1229



**Cockeysville Astrodrone**, 10824 York Rd., Cockeysville, MD 21030; (410) 666-1098



**Doug's Hobby Shop Raceway**, Rt. 301N, Box 328, Waldorf, MD 20601; (301) 843-7774



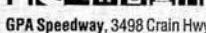
**40 Speedway**, 933 Pulaski Hwy., Havre de Grace, MD 21078; Doug (410) 538-3135, or Vince, (410) 939-3588



**Friendship Off-Road Racers**, 1531 Florida Ave., Severn, MD 21144; (301) 551-3050



**Fruitland Indoor Race Center**, 203 N. Fruitland Blvd., Fruitland, MD 21826; Thomas Duncan, (410) 543-4329



**GPA Speedway**, 3498 Crain Hwy., Bowie, MD 20715; George Cole, (301) 805-9004



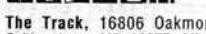
**Maryland R/C Track**, 4201 G.B. Road, Seabrook, MD 30725; James Holes, (410) 322-6125



**Radio Control Cars Inc.**, 13600-A Indianapolis, Bowie, MD 20715; Paul Fauth, (301) 262-1444



**Suzie Goose Hobbies**, 718 E. Gude Dr., Rockville, MD 20850; (301) 279-2966



**The Track**, 16806 Oakmont Ave., Gaithersburg, MD 20877; Mimi Wong, (301) 417-9630



**MASSACHUSETTS**

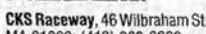
**Archer's Lane R/C Raceway**, 11B Washington St. (Rt. 1), S. Attleboro, MA 02730; (508) 399-6762



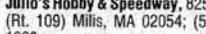
**C&C Hobby & Raceway**, 562 Russells Mills Rd., S. Dartmouth, MA 02748; (508) 997-4131



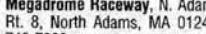
**Centerline Hobbies**, 167 Corporation Rd., Hyannis, MA 02601; (508) 771-1244



**CKS Raceway**, 46 Wilbraham St., Palmer, MA 01069; (413) 283-2260



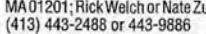
**Julio's Hobby & Speedway**, 825 Main St. (Rt. 109) Milis, MA 02054; (508) 376-1933



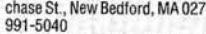
**Megadrome Raceway**, N. Adams Plaza, Rt. 8, North Adams, MA 01247; (413) 743-7223



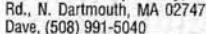
**Mike's Speedway**, Rt. 9, Mt. Farms Mall, Hadley, MA 01035



**Naytrix Raceway**, Holmes Rd., Pittsfield, MA 01201; Rick Welch or Nate Zuckerman (413) 443-2488 or 443-9886



**R/C Hobbies & Speedway**, 1311 Purchase St., New Bedford, MA 02740; (508) 991-5040



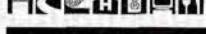
**R/C Hobbies & Speedway**, 562B Reed Rd., N. Dartmouth, MA 02747; Rick or Dave, (508) 991-5040



**R/C World Raceway**, 100 Crawford St., Leominster, MA 01453; Dan, (508) 537-9733



**West St. Hobbies**, 114C Main St., Medway, MA 02053; (508) 533-1231



## MICHIGAN

**Baja Bayou Off-Road Raceway**, 5313 W 22 Mile Rd., Tustin, MI 49688; Mike Langworthy, (616) 829-3447



**Can-Am Hobbies Speedway Park**, 1148 Gratiot, Marysville, MI 48040; (313) 364-3338



**Central Michigan R/C Raceway**, 1270 James Savage, Midland, MI 48640; Mark Siebert, (517) 631-1488



**Cereal City R/C Off-Roaders**, 2000 E. Columbia Ave., Battle Creek, MI 49015; (616) 963-2506



**Chatter Box Racing**, P.O. Box 164, Old State Rd., Central Lake, MI 49622; Bill Altergott, (616) 544-9829



**Dirt Slingers Raceway**, 2460 Edwards, 2460 S. M139, Benton Harbor, MI 49022; Tom Edwards, (616) 927-1431



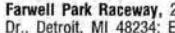
**DNR Speedways**, 4630 Hill Rd., Harbor Beach, MI 48441; Kelcey, (517) 479-6097



**Doug's Dirt Way**, 5210 Colby Rd., Owassa, MI 48867; Doug Conn, (513) 723-3368



**Elmer's RC Speedway**, 2683 Lakeshore Dr., Niles, MI 49120; Randy or Kristi Easton, (616) 683-7380



**Farwell Park Raceway**, 2781 E. Outer Dr., Detroit, MI 48234; Eddie McCray, (313) 967-0805



**Fun Tyme High Banked Oval**, Fun Tyme Adventure Park, 6295 E. Saginaw Hwy., Grand Ledge, MI 48837; (517) 655-5503



**Harrison International Speedway**, 3519 N. Clare Ave., Harrison, MI 48625; John Starkweather, (517) 539-2921



**JT Superspeedway**, 825 Golden Ave., Battle Creek, MI 49017; Jerry or Dan, (616) 965-0571



**Larry's Performance R/C's**, 3430 Highland Rd., Waterford, MI 48328; Larry Rossi, (313) 683-5529



**Ludington R/C Raceway**, 1483 N. Dennis Rd., Ludington, MI 49431; (616) 843-4654



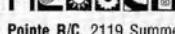
**Mason County R/C Car Track**, West Shore Community College, (611 N. Washington Ave., Ludington, MI 49431) Scottsville, MI 49454; (616) 843-8553 or 843-4837



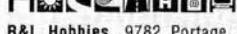
**Mikey's Raceway**, 7 North St., Yale, MI 48097; Mike Huber, (313) 387-4308



**NMRC Raceway**, 110N. Ostego, Gaylord, MI 49735; Ed Schneider, (517) 732-3963



**Pointe R/C**, 2119 Summerton Rd., Mt. Pleasant, MI 48858; Frank, (517) 773-5711



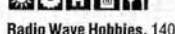
**R&L Hobbies**, 9782 Portage Rd., Kalamazoo, MI 49002; Rex Simpson, (616) 323-3686, fax (616) 329-1744



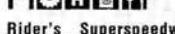
**R&S Hobbies & Raceway**, 230 Mill St., St. Louis, MI 48801; Rich Beard or Scott Davis, (517) 681-3463



**Rad & Bad Raceway**, 810 S. Martin Rd., Gladwin, MI 48624; Mick Bushong, (517) 426-4373



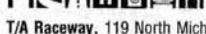
**Radio Wave Hobbies**, 14000 Old 14 Mile Rd., Greenville, MI 48838; (616) 754-2170



**Rider's Superspeedway**, 42040 Koppernick, Ste. 400, Canton, MI 48180; Brent Martin, (313) 451-5599



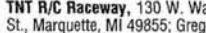
**Rider's Superspeedway**, 4415 S. Westlodge, Kalamazoo, MI 49008; Ken Penn (616) 349-2666



**T/A Raceway**, 119 North Michigan, Big Rapids, MI 49307; Harvey Bailey, (616) 796-3217



**Thumb Raceway**, 3441 S. Main St., Marquette, MI 48453; (517) 635-7848



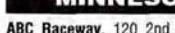
**TNT R/C Raceway**, 130 W. Washington St., Marquette, MI 49855; Gregory Berg, (906) 228-4098



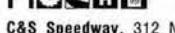
**USA Raceways**, 6803 Dixie Hwy., Bridgeport, MI 48722; (517) 777-7084



**Village Hobbies-n-Crafts**, 17824 N. Maple Island, Hesperi, MI 49421; Alan or Fran, (616) 854-1374



**Elmer's RC Speedway**, 2683 Lakeshore Dr., Niles, MI 49120; Randy or Kristi Easton, (616) 683-7380



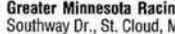
**C&S Speedway**, 312 N. Broadway, Crookston, MN 56716; Ross Lange, (507) 825-5065



**Jerry's Performance R/C's**, 3430 Highland Rd., Waterford, MI 48328; Larry Rossi, (313) 683-5529



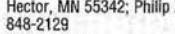
**Dr. Skate's R/C Raceway**, Frontage Road, La Cresent, MN 56401; Gary Behrens, (608) 788-6141



**Greater Minnesota Racin' Place**, 3302 Southway Dr., St. Cloud, MN 56301; Jon Jackson, (612) 252-9768



**Minn-E-Golf & Hobby**, 9100 Park Ave., Elk River, MN 55330; (612) 441-8365



**The PBR Off-Road Rally**, 721 Cedar Ave., Hector, MN 55342; Philip Zempel, (812) 848-2129



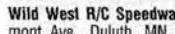
**Range Racing World, Inc.**, 412 Jones St., Eveleth, MN 55734; Bill, (218) 744-4423



**Squid's R/C Autos**, 924 Main Avenue, Moorhead, MN 56580; Jeff Greenwell, (218) 233-3554



**Tracksid Racing**, 2300 Myrtle Ave., Saint Paul, MN 55114; Winton, (612) 644-3424



**Wild West R/C Speedway**, 2822 Piedmont Ave., Duluth, MN 55811; Roger Deloach, (218) 727-6248

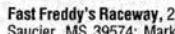


## MISSISSIPPI

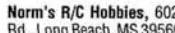
**Crossroads Raceway**, Mall of Corinth, Rt. 1, Box 1, Corinth, MS 38834; (601) 287-2110



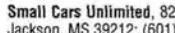
**Dixieland R/C Speedway**, 2535 Tabernacle Rd., Columbus, MS 39702; Jeffrey Alvey, (601) 328-9429



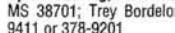
**Fast Freddy's Raceway**, 20390 Hwy. 49, Saucier, MS 39574; Mark Payne, (601) 832-0315



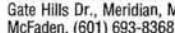
**Norm's R/C Hobbies**, 602 W. Old Pass Rd., Long Beach, MS 39560; Norm, (601) 863-0524



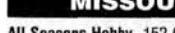
**Small Cars Unlimited**, 820 Cooper Rd., Jackson, MS 39212; (601) 372-FAST



**Up Front Racing**, 649 Norris St., Greenville, MS 38701; Trey Bordon, (601) 334-9411 or 378-9201

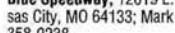


**World of Hobbies Raceway**, 4909 W. Gate Hills Dr., Meridian, MS 39305; Joe McFadden, (601) 693-8368



## MISSOURI

**All Seasons Hobby**, 152 O'Fallon Plaza, O'Fallon, MO 63366; Bob Daniels, (314) 281-8767



Ozark Hobby, Rt. 6, Box 248-3, Ozark, MO 65721; Deborah Adkisson, (417) 485-4552



Peevly R/C Raceway, 2199 Meadow, Bartlett, MO 63012; Jerry Benz, (314) 464-8627



R+ Hobby, 590 Jungemann Rd., St. Peters, MO 63376; (314) 928-9838



S&P Performance Shop, 5383 Highway "N," St. Charles, MO 63304; Paul Lund, (314) 447-5252



Suppenbach Winter Racing, Route 5, Box 66, Pleasant Hill, MO 64080; Larry Suppenbach, (816) 987-5828



The Track, Rt. 6, Box 771, Poplar Bluff, MO 63901; Scott, (314) 785-5237 or Bruce, (314) 785-7400



## MONTANA

Bozeman R/C Powerhouse Track, west side of the Main Mall, Bozeman, MT 59715; (406) 586-6461



Garden City Raceway, 11885½ Hwy. 93, Lolo, MT 59847; Dave Erickson, (406) 273-2776



Hobbtown Raceway, 17 Tai Lane, Bozeman, MT 59715; Tom Duncan, (406) 587-3512



Magic City R/C Raceway, 14th St. W. & Central Ave., Billings, MT 59101; (406) 259-9004



Pockets Raceway, Montana State Fairgrounds, Great Falls, MT 59405; Greg Vetter, (406) 761-7279



Stormer Raceway, 23 High Speed Road, Glasgow, MT 59230; Mike Stormer, (406) 228-4569



## NEBRASKA

Hobby Town USA, 3404 W. 13th St., Grand Island, NE 68801; Ed Conroy, (308) 382-3451



On-Road Raceway, 315 S. 74th St., Omaha, NE 68114; Doc Holiday, (402) 392-1126



Over the Wall Gang, Higiroabee Speedway, 401 Market Pl., Norfolk, NE 68701; Matt Moeller, (402) 379-0879



The Salvation Army, 4032 Harrison St., Omaha, NE 68147-1012; Lt. Michael Delashmit, (402) 634-3414



## NEVADA

AMS R/C Raceway, 1130 Icehouse Ave., Sparks, NV 89431; Terry Ramsey, (702) 355-8803



Fastrax Raceway, 3218 W. Desert Inn, Las Vegas, NV 89108; Larry or Sue Ashton, (702) 222-0307 or 656-2855



Little City Hobbies Raceway, 640 Kuenzli, Reno, NV 89503; shop, (702) 786-3611 or Bill Avery, (702) 358-7629



Western R/C, 6404 Richmar, Las Vegas, NV 89139; Randy Grigg or Mitch Strete, (702) 897-7227



## NEW HAMPSHIRE

C.T. Hobbies R/C Raceway, 49 Eaton Rd., Auburn, NH 03032; (603) 483-2274



4-K Racing, 100 Warwick Rd., Winchester, NH 03470; (603) 239-6207



Hobbies Plus R/C Raceway, 14 Celina Ave., Nashua, NH 03063; (603) 882-9200



Hobby Etc., Heritage Place, RT. 101A, Amherst, NH 03031; (603) 595-8549



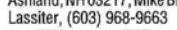
Hooksett Hobby Raceway, 1328 Hooksett Rd., Hooksett, NH 03106; (603) 625-2420



NE Hobbies R/C Raceway, 49 Eaton Hill Rd., Auburn, NH 03032; Chuck Therriault, (603) 483-2274



R/C Racing Connection, P.O. Box 905, Ashland, NH 03217; Mike Bridges or Barry Lassiter, (603) 968-9663



Robert's Railroad & Hobbies, Box 431, Rt. 4 at RT. 152, Northwood, NH 03261; Robert Jeffers, (603) 942-5193



## NEW JERSEY

Action Raceway & Hobby Center, Rt. 295 & Harmony Rd., Gibbstown, NJ 08027; (609) 423-8933



Al & Rich's R/C Speedway, 90 S. White Horse, Hammonton, NJ 08037; Ray Murray, (609) 561-7584



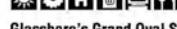
Dave Bicknell Memorial Raceway, P.O. Box 914, Absecon, NJ 08201; Rob Caruso, (609) 748-8291



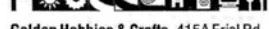
EMC Tracks & Trains, 1235 Rt. 23 South, Wayne, NJ 07470; (201) 628-4838



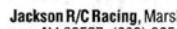
Family Hobbies, Northwest & Weymouth Rd., Vineland, NJ 08360; Ziggie Tepper, (609) 794-8677



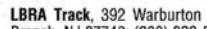
Glassboro's Grand Oval Speedway, 167 S. Delsea Dr., Glassboro, NJ 08283; (609) 863-1551



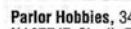
Golden Hobbies & Crafts, 415A Erial Rd., Pine Hill, NJ 08021; (609) 782-1222



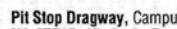
Jackson R/C Racing, Marshall Ave., Jackson, NJ 08527; (908) 905-1593



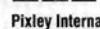
LBRA Track, 392 Warburton Pl., Long Branch, NJ 07740; (908) 222-5122



Parlor Hobbies, 34 Broad St., Matawan, NJ 07747; Charlie Roder, (908) 566-3158



Pit Stop Dragway, Campus Rd., Totowa, NJ 07512; Kimberly Frank, (201) 942-5955



Pixley International Speedway, 763 Peters Dr., P.O. Box 189, Martinsville, NJ 08836; Richard Toole, (908) 560-0399



# PROLINE

## Pro-Line Introduces New XTR Compound

Released four years ago, Pro-Line's original XT compound was developed as a lightweight, high-performance blend of natural rubber that would offer superior traction on a variety of track conditions. In addition, tires made of this compound lasted much longer than those made of conventional rubber compounds.



Pro-Line was one of the first tire manufacturers to design car and truck tire-tread patterns to suit specific track conditions: the Race Engineered Design (R.E.D.) Series.

Through a subtle reworking of its XT compound, Pro-Line has taken off-road tire technology to the next level of performance, and the result is the new XTR compound. This was developed to provide serious racers with a softer, more pliable tire that will have more "bite" on harder tracks.

## Pro-Line's Winning Off-Road Record

'92 ROAR Modified 2WD National Champion

'92 ROAR Modified 4WD National Champion

'92 ROAR Modified Truck National Champion

'92 NORRCA Modified 2WD National Champion

'92 NORRCA Modified 4WD National Champion

'92 NORRCA Modified Truck National Champion

'92 ROAR Region 12 Modified 2WD & 4WD Champion

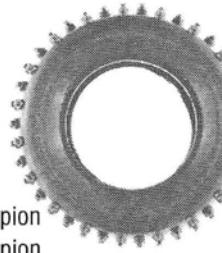
'92 ROAR Region 11 Modified 2WD & 4WD Champion

'92 ROAR Region 10 Modified Truck, Stock Truck & 2WD Champion

'92 ROAR Region 4 Modified 2WD & 4WD Champion

'92 ROAR Region 3 Modified 2WD Champion

'92 Reedy Top Gun Modified 2WD, 4WD & Truck Champion



## New XTR Part Numbers

8015 Pro-15 XTR Multi-Rib 2.1" Front 2WD

8022 Pro-22 XTR Coarse Spike 2.150" Rear 2WD or 4WD

8065 Pro-65 XTR Multi-Rib w/Staggered Mini-Bars 2.2" Truck Front

8080 Pro-80 XTR Original Mini-Pin Design 2.0" Rear 2WD or 4WD

8081 Pro-81 XTR Mini-Pin 2.150" Rear 2WD or 4WD

8082 Pro-82 XTR Fuzzie 2.150" Rear 2WD or 4WD

8090 Pro-90 XTR Original Mini Pin Design 2.2" Truck Rear

8092 Pro-92 XTR Fuzzie T 2.2" Truck Rear

8101 Pro-101 XTR World's Step-Spike 2.150" Rear 2WD or 4WD

8110 Pro-110 XTR Plus Step-Spike 2.150" Rear 2WD or 4WD

8120 Pro-120 XTR Coarse Spike 2.2" Truck Rear

8130 Pro-130 XTR Plus Step-Spike 2.2" Truck Rear

8150 Pro-150 XTR Step-Spike 2.2" Truck Rear

Pro-Line's New XTR Compound is available today. See your local dealer!

If your local dealer doesn't carry one of these products, give us a call! We'll help you track some down.

**Pro-Line USA**, P.O. Box 456, Beaumont, CA 92223; (714) 849-9781.

# Track Directory

The Race Place, Rt. 33 & 34, Farmingdale, NJ 07727; (908) 938-5215



Radical Raceway, 100 Rt. 17S, Lodi, NJ 07727; Lou, (201) 843-6996



Ricky G's Raceway, 2208A Hamilton Blvd., South Plainfield, NJ 07080; (908) 753-1518



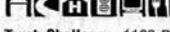
S&M Speedway, 4 Field Rd., Bedminster, NJ 07921; Lee Spano, (908) 234-2750



Spernel Speedway, 2301 Rte. 9 North, Great American Flea Market, Howell, NJ 07731; Mitch, (908) 577-9191



Tri-Oval Speedway & R/C Center, 296 S. Main St., Phillipsburg, NJ 08865; (908) 454-2223



Truck Challenge, 1162 Rt. 202-206 N., Bridgewater, NJ 08807; Michael Gill, (908) 658-9616

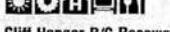


Zepplin Hobbies, 92 Rt. 23N, Riverdale, NJ 07457, Lou Ballini, (201) 831-7717



## NEW MEXICO

Cliff Hanger R/C Raceway I, 1515 E. 20th Space D, Farmington, NM 87401; Butch or Joey, (505) 327-3187



Cliff Hanger R/C Raceway II, 2508 Fox St., Farmington, NM 87401; Butch or Joey, (505) 327-3187



The Pit, Las Cruces Hobby Raceway, 1996-A S. Valley Dr., Las Cruces, NM 88001; (505) 524-8530



Roswell R/C Raceway, 1004 N. Greenwood, Roswell, NM 88201; Larry Jumper, (505) 623-6693

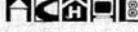


TRC Race Park, 1303 E. 8th St., Truth or Consequences, NM 87901; Gary Whitehead, (505) 894-3211



## NEW YORK

A&D's FasTracks, 1000 N. Main St., Brewster, NY 10509; (914) 279-2065



A&S Race Center & Hobbies, 120 Cayuga St., Canavie View Mall, Fulton, NY 13069; (315) 598-2772



Aldon Speedway, 100 Castle St., Geneva, NY 14456; (315) 789-8343



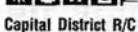
Brockport Speedway, 6000 Sweden Walker Rd., Brockport, NY 14420; Gil & Betty Glidden, (716) 637-6224



Brownie's Pro & Sport Hobbies, 124 Bennett St., Staten Island, NY 10302-1426; John Brown, (718) 727-2194



Cars R/C & Guitars, 4360 Seneca St., West Seneca, NY 14224; (716) 674-0905



Capital District R/C Racers, 27 Venus Dr., Albany, NY 12205; Keith Green, (518) 783-7859



Catskill Regional R/C Raceway, Glasco Turnpike, Mt. Marion, NY 12458; (914) 336-5951



Central New York R/C Auto Racers, Martin St., P.O. Box 116, Rome, NY 13440; John Orr, (315) 336-5140



Chipmunk Hill R/C Speedway, 217 Pine St., Theresa, NY 13961; Ted House, (315) 628-5065



Creekside R/C Raceway Park, 5242 Route 228, Trumansburg, NY 14886; Lawrence C. Updike, (607) 387-5513 after 6 pm.



D&J's Speedway, 94 Maple St., Croton-on-Hudson, NY 10520; Dan Spatta, (914) 271-5797



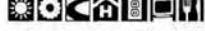
Daytona Miniature Raceway, 59 Lamar St., W. Babylon, NY 11704; (516) 491-4041



Dirt Track, 17 Fairway Dr., Manorville, NY 11949; Billy Wroblewski, (516) 878-0737



East End Off-Roaders, Route 25A at Gull's Square, Wading River, NY 11792; (516) 929-8844



Gamlen's R/C Motor Speedway, 8453 Rt. 11, P.O. Box 1430, Cicero, NY 13039; Dave Wright, (315) 699-2991



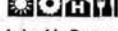
GP Racing, 6785 Martin St., Rome, NY 13440; Greg Philley, (315) 336-5140



Island Hobbies & Raceway, 410 Commack Rd., Deer Park, NY 11729; (516) 254-6229



HobbyTown USA, 629 Plank Rd., Clifton Park, NY 12065; Larry Burwell, (518) 383-1215



Lakeside Raceway & Hobbies, 712 Willow Ave., Ithaca, NY 14850; (607) 272-0248



Latest Hobbies & Raceway, Rt. 25A, Wading River, NY 11792; (516) 929-8844



LI 1/4-Scale Racers, 63 Horton Dr., Huntington Station, NY 11746; (516) 351-5384



Long Island R/C Club, P.O. Box 539, Miller Place, NY 11764; John Strahm, (516) 821-2797 or John Kieman, (516) 821-8923



Maspeth Raceway, Rust St. & 57 Rd., Maspeth, NY 11378; Walter, (718) 897-7921



North Fork Pacesetters, Jimmy Jon's Hobby House, 7355 Main Rd., Mattituck, NY 11952; (516) 298-2020



Norwood Hobbies Raceway, 2-4 S. Main St., Norwood, NY 13668; Tom Jarvis, (315) 353-6621



Performance Hobbies Raceway, 205 North Ave., Webster, NY 14580; Anthony Cenzi, (716) 621-1274



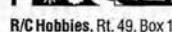
Performance Plus R/C Speedway, The Hobby House, 114½ Gones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772



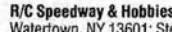
Queens Off-Roaders, 42-12 13th St., Long Island City, NY 11101; (718) 392-5766



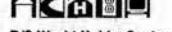
R/C Competition Corner, K-Mart Plaza, Matydale, NY 13211; (315) 455-8718



R/C Hobbies, Rt. 49, Box 138, Constantia, NY 13044; Roy Catholdi, (315) 623-9536



R/C Speedway & Hobbies, 155 State St., Watertown, NY 13601; Steve Pena, (315) 788-1320



R/C World Hobby Center, 69-57 Juniper Blvd. S., Middle Village, NY 11379; (718) 326-0002



Race O Rama, 44 Sharon Ave., Plattsburgh, NY 12901; James Varno, (518) 562-5442 or 643-2678



Raceworld R/C & Hobby, Budd Rd., Phillipsport, NY 12769; Joe Colombo Jr., (914) 754-7664



Rampage R/C, 53-57 Beadart Pl., Hyde Park, NY 12538; Brian Walker, (914) 229-2456



Rapid Transit Raceway, 2104 Broadway, Schenectady, NY 12306; Dick Crounse, (518) 372-0777



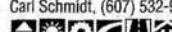
Riverside R/C & Hobby, P.O. Box 125, Rt. 126, Beaver Falls, NY 13305; (315) 346-1682



Rochester Raceway & Hobby, 1725 N. Clinton Ave., Rochester, NY 14621; George, (716) 467-2427



Rock River Model Hobbies, RD 2, Box 297, Rock River Rd., Interlaken, NY 14847; Carl Schmidt, (607) 532-9489



Russel's R/C Racetrack, 1793 Ridge Rd., Ontario, NY 14519; (315) 524-2522



Schenectady R/C Speedway, 955 State St., Schenectady, NY 12307; (518) 370-3747



Schoharie Co. R/C Car Club, P.O. Box 126, Cobleskill, NY 12043; (518) 234-4600



Seneca R/C, 2339 Yerkes Rd., Romulus, NY 14541; (315) 789-8343



Skaneateles Raceway & Hobby, P.O. Box 102, Rt. 20, W. Genesee St., Skaneateles, NY 13152; (315) 685-8077



Small Torque Racers of Long Island, 24 Horton Dr., Huntington Station, NY 11746; George Franz, (516) 271-1119



South Shore Hobby & Raceway, 311 W. Roe Blvd., Patchogue, NY 11772; Don Hauck, (516) 758-5567



Southern Tier Raceway & Hobbies, 88 Paige St., Owego, NY 13827; Chet or Anita Bowers, (607) 687-5395



Team Earthquake, The Hobby House, 114½ Gones & Gifford Ave., Jamestown, NY 14701; (716) 488-1772



Transit Speedway & Hobbies, 5319 Transit Rd., Depew, NY 14043; (716) 684-7368



Ulster County Speedway, P.O. Box 71, New Platz, NY 12561; Joe Colombo Jr., (914) 754-7664



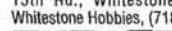
Walt's Hobby, 2 Dwight Park Dr., Syracuse, NY 13209; (315) 453-2291



Western New York R/C Speedway, 58 Spring St., Cuba, NY 14727; Jason Congdon, (716) 968-3586



Whitestone Off-Road Raceway, 149-50 15th Rd., Whitestone, NY 11357; Whitestone Hobbies, (718) 767-6767



## NORTH CAROLINA

B-n-B R/C Raceway, 7805 S. Airazona Dr., Raleigh, NC 27604; Craig Barber, (919) 878-8407



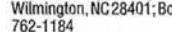
Badin Shore Raceway, 1730 Jackson Lake Rd., High Point, NC 27263; Jimmy or Tim Martin, (919) 431-9258



C&H Raceway, 1400 N. Cannon Blvd., Kannapolis, NC 28083; Camera & Hobby Shop, (704) 933-5321



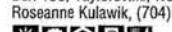
Cape Fear Speedway, 207 Harley Rd., Wilmington, NC 28401; Bob Justice, (919) 762-1184



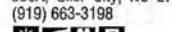
Carolina R/C Drag Assoc., 907-C Warsaw Rd., Clinton, NC 28328; (919) 592-9489



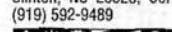
Carolina Hobbies R/C Raceway, Route 1, Box 158, Taylorsville, NC 28681; Kim & Roseanne Kulawik, (704) 495-4040



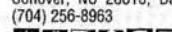
Clapp's R/C Motor Speedway, Rt. 4, Box 300A, Siler City, NC 27344; Al Clapp, (919) 663-3198



Clinton R/C Raceway, 907-C Warsaw Rd., Clinton, NC 28328; Corbett Marshburn (919) 592-9489



Dan's R/C Raceway, Rt. 4, Box 392A, Conover, NC 28613; Danny Dellinger, (704) 256-8963



Granite City R/C Raceway, 192-1 N. Main St., Mt. Airy, NC 27030; (919) 786-1466



Hi-Performance Hobbies & R/C Raceway, P.O. Box 320, Earl, NC 28038; Darrell Hollifield, Steve Biess, (704) 482-4391



Hobbies, Etc., 5540 Atlantic Springs, Raleigh, NC 27604; Don Asplen, (919) 790-1444



Hobby Park, W. Clemmonsville Rd., Winston-Salem, NC 27103; Dick Butler, Parks & Recreation, (919) 727-2063



The Hobby Speedway, Hwy. 25, P.O. Box 279, Naples, NC 28760; Jerry or Kelda Bowers, (704) 684-9814



AACAction Speedway, P.O. Box 6, Morral, OH 43337; Tim McKnight, (614) 465-9891 or Bill Harris, (614) 387-5912



A&D R/C Raceway, 5096 Rt. 127S., Eaton, OH 45320; Aaron Garrett, (513) 452-1662



Aircraft's R/C Raceway, 1370 Custer-Orangeville Rd., Brookfield, OH 44403; (216) 448-1573



Alternative Racing Association, Canton C.R. Speedway, 2600 17th St., East Canton, OH 44730; Neal Everhart, (216) 484-2587



Joe's Hobby Shop & Raceway, Rt. 2, Box 682-B, Bessemer City, NC 28016; (704) 435-2912



Mega Track of the Triad, 5540-105 Atlantic Springs Rd., Raleigh, NC 27604; Don Asplen, (919) 790-1444



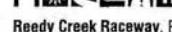
Motorlead R/C Raceway, 125 Park St., Canton, NC 28716; (704) 648-7911



Mountain R/C Raceway, Hwy. 107N, P.O. Box 67, Glenville, NC 28736; (704) 373-3709



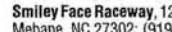
PC Hobbies, 143 Industrial Dr., King, NC 27021; Mike Ingles, (919) 983-2514



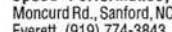
Reedy Creek Raceway, Rt. 14, Box 946, Conard Sowers Rd., Lexington, NC 27292; (704) 731-4022



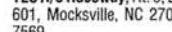
Sandhills Raceway Inc., US #1 South, Aberdeen, NC 28315; (919) 944-7414



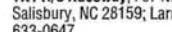
Smiley Face Raceway, 120 W. Center St., Mebane, NC 27302; (919) 563-3822



Speed Performance, 4121 Lower Moncur Rd., Sanford, NC 27330; Howard Everett, (919) 774-3843



TLC R/C Raceway, Rt. 6, Box 321-A, Hwy. 601, Mocksville, NC 27028; (704) 756-7569



TNT R/C Raceway, 707 N. Salisbury Ave., Salisbury, NC 28159; Larry Martin, (704) 633-0647



Two Toms Hobbies, 155 Boone Square St., Hillsborough, NC 27278; Tom York,

American Raceway, 234 Robbins Ave., Niles, OH 44446; George Nikoloff, (216) 544-5455



Bryan Thunderdrome, Townline Rd., Bryan, OH 43506; Jeff Lehmann, (419) 636-9100



Classic Hobbies & Raceway, 2845 W. Waterloo Rd., Akron, OH 44312; (216) 628-3222



C/R Hobbies Top Race Track, 4916 Main Ave., Ashtabula, OH 44004; Virginia Gagat, (216) 992-3833



D&J R/C Raceway, 801 W. Market St., Orrville, OH 44667; Don Yoder or Mark Nussbaum, (216) 682-4266



D&S Hobbies Raceway, 7701 Crite Rd., Concord, OH 44077; (216) 354-2112



FFA Speedway, 1001 Old Columbus Rd., Wooster, OH 44676; Roger Franks, (216) 264-1848



Golden Bear Hobbies, 154 N. Millbourne Rd., Orrville, OH 44667; Bob Rodi, (216) 683-1250



Hi Tech Hobbies II, 116 S. Taylor, Loveland, OH 45140; Rick Lewis or Richard Kosar, (513) 683-8900



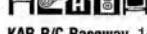
Hobby Mania Raceway, 6597 Route 224, Lowellville, OH 44436; (216) 536-8282



Innovative Hobbies/Lakeside Speedway, 3427 Manchester Rd., Akron, OH 44319; (216) 645-1333



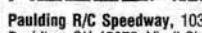
JB Hobby & Raceway, 8760 St. Rt. 201, Tipp City, OH 45371; Bob Curtis, (513) 845-8222



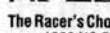
KAR R/C Raceway, 14511 Seacrist Rd., Salem, OH 44460; (216) 537-4039



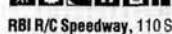
Lewisburg R/C Raceway, 395 St., Rt. 40, Lewisburg, OH 45338; Gene Butler, (513) 687-9201



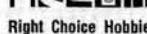
Paulding R/C Speedway, 103 N. Main, Paulding, OH 45879; Virgil Simindinger, (419) 238-0633



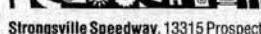
The Racer's Choice R/C Hobbies & Raceway, 1298 US Rt. 42, Mason, OH 45040; (513) 398-5539



RBI R/C Speedway, 110 Springdale Ave., Wintersville, OH 43952; Frank Luckino, (614) 264-9101



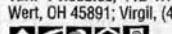
Right Choice Hobbies, 7760 Garrison Ave., Cincinnati, OH 45247; (513) 353-3343



Strongsville Speedway, 13315 Prospect, Strongsville, OH 44136; (216) 572-0430



Trusso's R/C Raceway, 100W. Crain Ave., Kent, OH 44240; Bill, (216) 673-0422



Turn 4 Hobbies, 112 W. Main St., Van Wert, OH 45891; Virgil, (419) 238-6840



Way Out Hobbies, 5583 Centerpoint Rd., Georgetown, OH 45121; (513) 375-4984



Woodlane Raceway, 2300 E. Dorothy Lane, Dayton, OH 45420; Jeff Simpson, (513) 298-1166



Y-City Hobby & Speedway, 120 S. 6th St., Zanesville, OH 43701; Kevin McKenna, (614) 455-3025



## OKLAHOMA

Coweta Hobby & Speedway, 310 S. Broadway, Coweta, OK 74429; Derrial Seabolt, (918) 486-3948



Off-Road Car Assoc. of Tulsa, 1924 W. Pittsburg Ct., Broken Arrow, OK 74012; Mark Seay, (918) 496-8961



R/C Auto Racing, 501 Westland Dr., Edmond, OK 73034; Gary Garrett, (405) 348-9253



RCAR, 161st St. E. & 81st St. S., Broken Arrow, OK 74014; Dave Cole, (918) 663-8998



RCRC, 400 S. Vermont, Suite 104, Oklahoma City, OK 73108; Rick or Steve, (405) 947-7223



Remote Control Race Course, 400 S. Vermont #104, Oklahoma City, OK 73108; Steve or Rick, (405) 947-7223

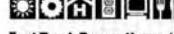


Wild Country Speedway, 127 South Main, Porter, OK, 74454; Charles McCollough, (918) 685-0372 or 687-1686



## OREGON

Aero Sports & Hobbies, 17941 NE Glisen, Portland, OR 97230; Mark Taylor, (503) 669-7665



Fast Track Recreations, 18023 SE Addie Rd., Milwaukee, OR 97267; Dale Nielson, (503) 659-7661



The Finish Line R/C Raceway, 560 W. D' St., Apt. 6, Creswell, OR 97426; Rod Carothers, (503) 895-4395



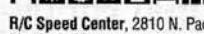
Mt. Bachelor Radio Raceways, 225 Centruy Dr. Bend, OR 97701; Rex Baldwin, (503) 589-6160



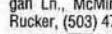
North Lawrence Raceway, 36 N. Lawrence, Eugene, OR 97401; Gary Hill, (503) 484-9857



R/C Plus Hobbies Raceway, 2029 25th St. SE, Salem, OR 97302-1130; Ron Smith, (503) 364-9188



R/C Speed Center, 2810 N. Pacific Hwy., Medford, OR 97501; (503) 779-8298



Yamhill County R/C Car Club, 722 Morgan Ln., McMinnville, OR 97128; Larry Rucker, (503) 472-7234



A-1 R/C Speedway, 15 S. Hanover St., Hummelstown, PA 17036; Clyde Felker, (717) 566-3335



## PENNSYLVANIA

Ansolan, 54 High St., Fairchance, PA 15436; Timothy Abraham, (412) 564-9956



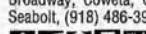
B&B Raceway, 252 Geiger Rd., Philadelphia, PA 19115; Rod Smith, Doug or Dave Bruestle, (215) 686-6086



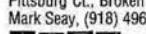
BJ's Hobbies & Raceway, 570 E. Camping Area Rd., Wellsville, PA 17365; Janet & Allen Wiley, (717) 292-3723; fax, (717) 292-3584



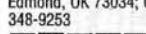
Brian's Raceway, 733 Flexer Ave., Allentown, PA 18103; (215) 435-1862



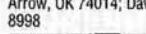
CER Motors R/C Div., 5743 Molly Pitcher Hwy., Marion, PA 17235; Charlie Booze, (717) 375-4635



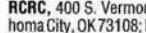
Clearfield R/C Car Club, P.O. Box 297, Clark Hill Rd., Hyde, PA 16843; Joe Welch (814) 765-3045



Cressona Mall Speedway, Rt. 61, Pottsville, PA 17901; (717) 385-3506



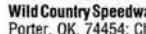
DARCAR, RD 1, Box 290, DuBois, PA 15801, (814) 375-0687



Denville R/C Hobbies & Raceway, 5601 Lincoln Way East, Fayetteville, PA 17222; Charles Gardinerhour, (717) 352-8899



Dreamboat Hobbies, 2810 Pennsylvania Ave. W., Warren, PA 16365; Louie Dussia, (814) 723-8052



East St. Raceway & Art Center, 747 E. Railroad Ave., Verona, PA 15147; (412) 826-0602



East St. Raceway, 736 East Railroad Ave., Pittsburgh, PA 15147; Steve Maiolo, (412) 826-1324, (412) 826-0602



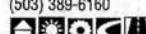
H/H Raceway, 402 W. Avondale-New London Rd., West Grove, PA 19390; Hopkins Hobbies, (215) 869-8585



Henning Scale Models R/C Raceway, 128 S. Line St., Lansdale, PA 19446; Bill Henning, (215) 362-2442



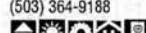
High Tek Hobbies, 13250 Rt. 30; N. Huntingdon, PA 15642; Ken Brooks, (412) 864-5278



Hipkins Hobbies Raceway, 402 W. Avondale-New London, West Grove, PA 19390; Doug Hipkins, (215) 869-8585



Hobby America Raceway, 5 Fitzsimmons St., Duke Center, PA 16729; Dan or Mike Coast, (814) 966-3765



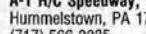
Hobby Heaven, 1845 Rt. 422 West, Indiana, PA 15701; Scott McAdoo, (412) 463-8010



Hobby House Raceway, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300



Hobby World Raceway, 172 Shillington Rd., Sinking Spring, PA 19608; Mike Wentzel, (215) 678-8760



Staub Bros. RC Speedway, 31 Locust St., Gettysburg, PA 17325; Todd or Scott Staub, (717) 334-5445



JR Hobby Shop & Raceway, 1806 Nagle Rd., Erie, PA 16501; Ron Bradear, (814) 898-1816



Koontz's Home & Hobby Center, 1205 Hoover St., Pittsburgh, PA 15204; (412) 331-3866



L&R R/C Racing, 15 S. Main St., Red Lion, PA 17356; Larry & Randy Shoemaker, (717) 244-1108



Main Hobby Race Center, 501 E. Lackawanna Ave., Olyphant, PA 18447; Dave or Zig, (717) 489-4566



Marshall's R/C Raceway, RR 4, Box 640, Honesdale, PA 18431; Bill or Dot Marshall, (717) 729-7458



Modellbahn Ott Hobbies, 1145 E. Philadelphia Ave. (Rt. 73), Gilbertsville, PA 19525; (215) 367-5925



Mt. Laurel Speedway, 835-8 Hiester Lane, Reading, PA 19605; Joe Vaccaro, (215) 921-0176



New Garden Farms/Mushroom Bowl, 812 W. Cypress St., Kennett Square, PA 19348; Drew Pannell, (215) 444-1850



Performance Hobby, 1305 Main St., Slatington, PA 18080; (215) 760-9855



Pit Stop Hobbies, 262 W. Main St., Mount Joy, PA 17552; James F. Stovet Jr., (717) 653-6222



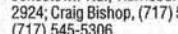
Pro Challenge Raceways, Wycombe Ave. (P.O. Box 536), Lansdowne, PA 19050; Bob Baldwin or Bob Paulage, (215) 622-7551



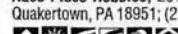
Prop & Wheels Raceway, 139 W. Broadway, Tamaqua, PA 18252; (717) 668-2288



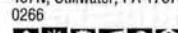
R&D Hobbies & Raceway, 5101-C Jonestown Rd., Harrisburg, PA 17112-2924; Craig Bishop, (717) 545-4984; fax (717) 545-5306



Race Place Hobbies, 201 Station Rd., Quakertown, PA 18951; (215) 538-2394



Radio Controlled Pro Speedway, Rt. 487N, Stillwater, PA 17878; (717) 387-0266



RCO Raceway, 519 Broadway, Hanover, PA 17331; Chris Shaffer, (717) 633-9490



Riverside Raceway, PA Ave. W. & Hickory, Warren, PA 16365; Jeff, (814) 723-4211



Hobby Heaven, 1845 Rt. 422 West, Indiana, PA 15701; Scott McAdoo, (412) 463-8010



Hobby House Raceway, Downingtown Marketplace, Downingtown, PA 19335; J.T. Nelson, (215) 269-1300



Hobby World Raceway, 172 Shillington Rd., Sinking Spring, PA 19608; Mike Wentzel, (215) 678-8760



Sidewinder's R/C Raceway Park, 1601-B West Enterprise St., North Charleston, SC 29406; Jimmy Closson, (803) 744-7441



T&T Radio Controlled Racing, Randolph Rd., Great Band, PA 18821; (607) 723-9357



TC's R/C's, 1537 Freport Rd., Natrona Heights, PA 15065; Tom Coriale, (412) 226-8802



Trains and Lanes, 3812 Newburg Rd., Easton, PA 18042; Jeff Setzer, (215) 253-8850



Wagonhill Hobbyland, RD 3, Box 183, Slippery Rock, PA 16057; (412) 458-4711



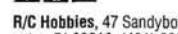
## PUERTO RICO

Cachon Off-Road Track, Box 952, Barranquitas, PR 00794; (809) 857-0341



## RHODE ISLAND

East Bay Hobbies, 629 Metacom Ave., Bristol, RI 02809; (401) 254-0778

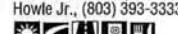


## SOUTH CAROLINA

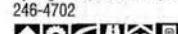
Bandits Performance R/C Hobbies, P.O. Box 1533, Darlington, SC 29532; Bryan Howle Jr., (803) 393-3333



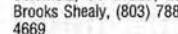
Berea R/C Speedway, 707 Sulphur Springs Rd., Greenville, SC 29611; (803) 248-4702



Capitol City Raceway, 1955 Legrand Rd., Columbia, SC 29223; Lee Moutlon or Brooks Shealy, (803) 788-7749 or 788-4669



HMW Hobby Shop & R/C Raceway, 4930 Dorchester Rd., North Charleston, SC 29418; Brian G. Heath, (803) 760-1578



Inland R/C Speedway, 61 Newfound Lane, Myrtle Beach, SC 29577; James Watten, (803) 293-1753



Mid-Carolina R/C Superspeedway, 2222 Wintercrest Dr., Rock Hill, SC 29732; Fred Penland, (803) 328-8278



# Track Directory

TBS Superspeedway, 800 Hwy. 15N, Hartsville, SC 29550; Johnny Tiller, (803) 332-7117



Thunder Valley R/C Speedway, 432 E. Chruch Rd., Easley, SC 29642; Tommy Ellison or Wayne Day, (803) 859-2323



## SOUTH DAKOTA

CSF Speedway, Central States Fairgrounds, Creative Arts Bldg., 800 San Francisco St., Rapid City, SD 57702; Scoop Laskowski, (605) 342-5292



Dakota Off-Road Racers, 2989 W. Br. Co. 12, Aberdeen, SD 57401; (605) 226-0604



1/8-Scale Off-Road, 2989 W. Br. Co. 12, Aberdeen, SD 57401; Brian Bourdon, (605) 225-0803 (evening), 226-0604 (day)



Flags of Fun R/C Raceway, 2802 Eglin St., Rapid City, SD 57702; Rex Conrad or Scoop Caskowski, (605) 341-2186



## TENNESSEE

Action Hobby Shop, 3723 S. Mendenhall, Memphis, TN 38115; Brian Stricklin or Justin Austin, (901) 365-2620



Butturini's Best Raceway, 4828 George Williams, Knoxville, TN 37922; Steve Butturini, (615) 531-0325



Crash-n-Burn R/C Raceway, 7030 Maynardville Pike, Knoxville, TN 37918; Gary Daniel, (615) 922-8722



Competition Park, Rt. 10, Box 268, Crossville, TN 38555; Terry or Yvette Bowen, (615) 277-5048



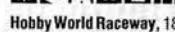
Cumberland Valley Raceway, P.O. Box 233, Ashland City, TN 37015; Jamie Pate, (615) 792-4371, ext. 1195



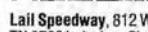
D&M's Downtown Raceway, 2703 US Hwy. 411S, Maryville, TN 37303; (615) 681-8919



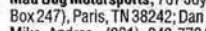
Estill Springs Raceway, P.O. Box 187, Hwy. 41-A, Estill Springs, TN 37330; David or Wendy Panter, (615) 649-5113



Hobby World Raceway, 185 S. Jefferson, Cookeville, TN 38501; Scott Large or Scott Watson, (615) 528-2808



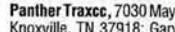
Lair Speedway, 812 Wells Rd., Maryville, TN 37801; Jack or Chris, (615) 983-9207



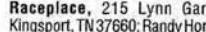
Mad Dog Motorsports, 707 Joy St. (Rt. 3, Box 247), Paris, TN 38242; Dan Mobley or Mike Andres, (901) 642-7794 or 644-1523



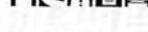
MSA R/C Racing, Rt. 12 Box H89 B, Crossville, TN 38555; D.R. Findley, (615) 456-0027



Panther Traxx, 7030 Maynardville Hwy., Knoxville, TN 37918; Gary Daniel, (615) 922-8722



Raceplace, 215 Lynn Garden Dr., Kingsport, TN 37660; Randy Horton, (615) 378-3330



Rivergate Hobby Center, 700A Two Mile Pkwy., Goodlettsville, TN 37072; David Hilt, (615) 859-3455



RMD Raceway, 175 Seavers Rd., Jackson TN 38301; Travis Robertson, (901) 424-0283



Smitty's Hobbies & Raceway, 6021 Dayton Blvd., Chattanooga, TN 37415; David Smith, (615) 877-9447

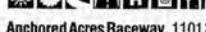


Tuckasee Off-Road Raceway, 1004 Lafayette Rd., Clarksville, TN 37042; Denny Hayward, (615) 645-2635

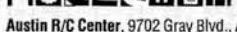


## TEXAS

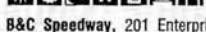
AA Raceway, 1617 Toomey Rd., Austin, TX 78704; (512) 474-8277



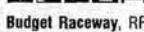
Anchored Acres Raceway, 1101 Sheppard Rd., Burkbank, TX 76354; Bob & Patricia Veal, (817) 569-4707



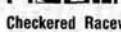
Austin R/C Center, 9702 Gray Blvd., Austin, TX 78758; Caton Cobb, (512) 832-8144



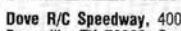
B&C Speedway, 201 Enterprise Row, #101, Conroe, TX 77301; Bobby Hillin, (409) 760-1986



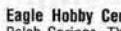
Budget Raceway, RR 1, Box 400 I-35, Bruceville, TX 76630; (814) 859-5296



Checkered Raceway, 7121 Perimeter Park, Suite 214, Houston, TX 77099; Rod Ward, (713) 849-3054



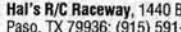
Dove R/C Speedway, 400 South I-35, Bruceville, TX 76663; Curtis A. Rowe, (817) 757-1150



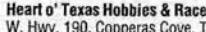
Eagle Hobby Center, 3601 Shepherd, Balch Springs, TX 75180; Terry Cooke, (214) 557-5290



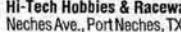
Eastex Raceway, 45000 Hwy. 59 N., New Caney, TX 77357; Heinz Falke, (713) 399-1527



Hal's R/C Raceway, 1440 Bessemer, El Paso, TX 79936; (915) 591-2213



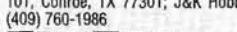
Heart o' Texas Hobbies & Raceway, 309 W. Hwy. 190, Copperas Cove, TX 76522; Larry Gholson, (817) 547-7505



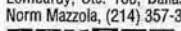
Hi-Tech Hobbies & Raceway, 1107 Port Neches Ave., Port Neches, TX 77651; (409) 724-2315



Indy R/C World, 220 Mesquite Village, Mesquite, TX 75150; (214) 686-7744



J&K Speedway, 201 Enterprise Row, Suite 101, Conroe, TX 77301; J&K Hobbies, (409) 760-1986



Norm's R/C Hobbies & Raceway, 2551 Lombardy, Ste. 160, Dallas, TX 75220; Norm Mazzola, (214) 357-3453



R/C Pro Shop, 12207 West County Road #129, Odessa, TX 79765



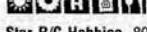
Rebel Hobbies & Raceways, 11925 Jones Maltsberger, San Antonio, TX 78216; George Norris, (210) 496-2396; fax, (210) 496-3294



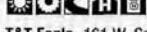
Southside R/C Raceway, 4409 FM2351, Friendswood, TX 77546; Roy Baxter, (713) 992-3541



Spring Creek R/C, 45 Fisherman's Rd., San Angelo, TX 76904; (915) 944-3850



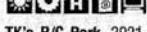
Star R/C Hobbies, 803 Garcia St., Port Isabel, So. Padre Island, TX 78578; Fred Carr, (512) 943-7546



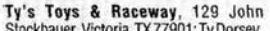
T&T Eagle, 161 W. Spring Creek Pkwy., #601, Plano, TX 75023; Tony Welborn, (214) 517-0562



Texas Speedway, 6707 Chimney Rock, Houston, TX 77029; I&I Hobby Center, (713) 661-7137



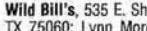
TK's R/C Park, 2921 Old Claude Hwy., Amarillo, TX 79101; (806) 622-0017



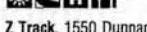
Ty's Toys & Raceway, 129 John Stockbauer, Victoria, TX 77901; Ty Dorsey, (512) 575-6154



Wes Hobby, 980 S. 4th St., Beaumont, TX 77701; Edmond Richards, (409) 839-4929



Wild Bill's, 535 E. Shady Grove, Irving, TX 75060; Lynn Morgan or Jerry Williams, (214) 438-9224



Z Track, 1550 Dunham Dr., Abilene, TX 79602; Chi Chi, (915) 692-8477



Lane's End Raceway, P.O. Box 153, Bridgewater, VA 22812; Tony Strother, (703) 828-6655 or 3471



Mid Atlantic Raceway, 89 E. Elizabeth St., Harrisburg, VA 22801; (703) 433-3952



NSWC MWR/R/C Track, C1243C Dahlgren, VA 22448; Doris Copen, (703) 663-1730



Sterling Truck & Auto Racers, 20921 Davenport Dr., Sterling, VA 22170; Ron Beckman, (703) 444-0333



The Tilt-yard, Rt. 1, Box 235A, Dayton, VA 22801; Homer W. Allman Jr., (703) 828-3471 or 828-6655



Trainland R/C Club, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (804) 483-2331

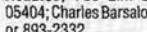


Winners Circle, 3236 W. Clay St., Richmond, VA 23230; (804) 355-7076



VERMONT

Barre Town R/C Club, Wall St. Complex, S. Main (Rt. 14), Barre, VT 05641; Russ Tribble, (802) 888-2860



Green Mountain Superspeedway & Hobbies, Elm St., Winooski, VT 05404; Charles Barsalow, (802) 893-2660



Hard Rock Raceway, Astrachan Dr., Bennington, VT 05201; Darren Ricchi, (802) 447-2656



Mike's Hobbies & Raceway, 162 N. Main St., Rutland, VT 05701; Stephen Rachlis, (802) 775-0059



Riverside R/C Speedway & Boyz R/C Hobbies, 700 Elm St., Windoski, VT 05404; Charles Barsalow, (802) 893-2660 or 893-2332



Firgrove TNT Raceway, 10611 136th E., Puyallup, WA 98374; Walt Hale, (206) 845-7675



Four Seasons R/C Racing, 146 School St. SE, Olympia, WA 98506; (206) 491-2430



Hank Perry Race Complex, Sullivan Rd., WA 99213; (509) 927-1879



JJ's Dirt Heaven, 6028 County K, Champion, WI 54229; (414) 866-9096



Maniac Motors Raceway, 244 Rt. 1 A 1 Rt. H, Kendall, WI 54638; (608) 847-4833



MARCCA Raceways, 1810 S. Park St., Madison, WI 53713; Jeff Gundlach, (608) 273-0519



## VIRGINIA

A-1 Raceways, 940 Radford Rd., Christiansburg, VA 24073; Kay or Charles Franks, (705) 381-9731 or 382-1173



Bob's Hobbies & Raceway, 910-J Brandy Creek Dr., Mechanicsville, VA 23111; Bob Wagner, (804) 746-2758



Cooper's R/C Raceway, Rt. 4, Box 12203, Chatham, VA 24531; (804) 724-4182



Crossroads Hobbies R/C Raceway, 1104 W. Main St., Salem, VA 24153; Ronnie Black, (703) 387-3414



Front Royal R/C Racing Association, Chester St. P.O. Box 1252, Front Royal, VA 22630; Roger Stoots, (703) 636-2637



H&S R/C Raceway, 565 Electric Rd., Salem, VA 24153; Henry Dowd or Stacy LaPrade, (703) 343-4012



Hobby Hangar Speedway, 443A Brookfield Corp. Dr., Chantilly, VA 22021; Kwang Ko, (703) 631-8820



KC's Radio Control & Repair, Rt. 4, Box 312, Trents Ferry Rd., Lynchburg, VA 24503; Curtis or Kim Wright, (804) 384-8596



Lane's End Raceway, P.O. Box 153, Bridgewater, VA 22812; Tony Strother, (703) 828-6655 or 3471



Mid Atlantic Raceway, 89 E. Elizabeth St., Harrisburg, VA 22801; (703) 433-3952



NSWC MWR/R/C Track, C1243C Dahlgren, VA 22448; Doris Copen, (703) 663-1730



Sterling Truck & Auto Racers, 20921 Davenport Dr., Sterling, VA 22170; Ron Beckman, (703) 444-0333



The Tilt-yard, Rt. 1, Box 235A, Dayton, VA 22801; Homer W. Allman Jr., (703) 828-3471 or 828-6655



Trainland R/C Club, 5661 Shoulders Hill Rd., Suffolk, VA 23435; Frank Stevens, (804) 483-2331



Winners Circle, 3236 W. Clay St., Richmond, VA 23230; (804) 355-7076



WASHINGTON

Allie's, 108 South K St., Aberdeen, WA 98520; (206) 533-6638



Arlington Heights Speedway, 13629 228th St. NE, Arlington, WA 98223; Shawn Bussert, (206) 435-3442



Firgrove TNT Raceway, 10611 136th E., Puyallup, WA 98374; Walt Hale, (206) 845-7675



Four Seasons R/C Racing, 146 School St. SE, Olympia, WA 98506; (206) 491-2430



Hank Perry Race Complex, Sullivan Rd., WA 99213; (509) 927-1879



JJ's Dirt Heaven, 6028 County K, Champion, WI 54229; (414) 866-9096



Maniac Motors Raceway, 244 Rt. 1 A 1 Rt. H, Kendall, WI 54638; (608) 847-4833



MARCCA Raceways, 1810 S. Park St., Madison, WI 53713; Jeff Gundlach, (608) 273-0519



Spokane Indoor Raceway, E. 6422 2nd Ave., Spokane, WA 99212; Mike Gjendem, (509) 534-RACE



Tacoma R/C Raceway Hobbies, 6305 6th Ave., Tacoma, WA 98406; (206) 565-1935



Tearor Raceway, 8012 S. Tacoma Way, Tacoma, WA 98499; Dave Kleinman, (206) 584-8659



WEST VIRGINIA

Fairmont R/C Raceway, 430 Fairmont Ave., Fairmont, WV 26554; Ed Kirby, (304) 363-5509



**Midwest Tri-Clone**, 144 N. Main St., West Bend, WI 53095; (414) 334-0487



**Muskyland R/C Raceway**, P.O. Box 1043, Hayward, WI 54843; Hayward R/C Wheels Club, (715) 462-3312



**Pacific R/C Club**, W7990 Hwy. P., Pardieville, WI 53954; Rhys Brenner, (608) 742-7100



**The Pits Hobby Shop**, 786 Morris Ave., Green Bay, WI 54304; (414) 494-4200



**R/C Hobby Off-Road Track**, Lewison Lane, Viroqua, WI 54665; Dan or Diane Sawvill, (608) 637-8221



**R/C Raceway**, 2239 Cty. Rd. E., Baldwin, WI 54002; Lance Van Damme, (715) 684-2690



**R/C Raceways & Hobbies**, 181 W. Marquette Ave., Oak Creek, WI 53154; Ralph & Cathy Augustino, (414) 764-9701



**R/C Spectacular**, Milwaukee Mecca Auditorium, c/o Wisconsin Motorsports Show, 11020 W. Rogers, Milwaukee, WI 53227; (414) 327-3999



**Radio Mania**, 129 Harrison St., North Prairie, WI 53153; Bill Bowes, (414) 392-9515



**Sparta R/C Raceway**, Golf Course Rd., Sparta, WI 54656; Eric Johnson, (608) 269-5861 or 269-6613



**Stoltz Raceways**, 548 Summit Dr., West Bend, WI 53095; (414) 338-6097



**Trackside Raceway**, 4405 W. Bradley, Milwaukee, WI 53223; Joel Gish, (414) 355-1910



**West Bend Hobbies**, 144 N. Main St., West Bend, WI 53040; (414) 334-0487



## WYOMING

**Collectable Creations Off-Road Oval Track**, 1790 Dell Range Blvd., Cheyenne, WY 82009; Phil Severson, (307) 632-2156



## AUSTRALIA

**Wodonga R/C Car Club**, 11 Murphy St., Wodonga, VIC 3690; Ron Langman, 011-6160-247-128



**Aubry R/C Car Club**, Aubry Showgrounds, Aubry, NSW 2640; Ron Langman, 060-247-128



## BRAZIL

**Hobby Center**, SOS.210 Bl.H Apt. 204, Brasilia, DF-Brasil 70.273; 061-242-0488



**Off Roaders**, Av. Guillermo Dummont Villargs, 317, Sao Paulo, CEP 05640; Waldir Ielpo, (055) 011-260-5628; fax (055) 011-831-4931



**Way of Cerrado**, Rua Fernandes Tourinho, 999 - 4o. Floor, Belo Horizonte, Minas Gerais, Brazil 30112-000; Claudio Teodoro Correa, 55.31.681.1470 (track), 55.31.233.3676 (office), 55.31.227.0884 (fax)



## CANADA

**Aprilia Track**, 20 Parsons Ridge, Kanata, Ontario K2L 2N4; (613) 836-2577



**ATN**, 2000 Paul Hubert, Nicolet, Quebec J0G 1E0; Louis Durand, (819) 293-6097



**Autodrome des Prairies**, 935 Boul. St-Luc, St-Luc, Quebec J0J 2AO; (514) 348-0718



**Circuit R/C Bonzai**, 164 Cowie, Granby, Quebec J2G 3V3; (514) 372-3622



**Circuit St-Denis Auto Téléguides**, 292 DuLion, St-Denis sur Richelieu, Quebec, J0H 1K0; Francois Rivard, (514) 787-1127



**Circuit Teleguide Ville Mercier**, 1101 St. Jean Baptiste, Mercier, Quebec J6R 1C6; Norm Foster, (514) 699-4003



**Club AVATT**, 244, rue Hotel de Ville, Deauville, Quebec; Daniel Vanier, (819) 864-6262



**Crash Course**, Box 9, Site 8, RR #1, Spruce Grove, Alberta T7X 2T4; Tim Starreveld (403) 963-5795



**Dynamic Hobbies**, 21 Concourse Gate, Unit 6, Nepean, Ontario K2E 7S4; Clark Freeman, (613) 225-9634



**The Glass Castle Off-Road**, RR#7 Trans Canada Hwy., Duncan, B.C. V9L 6P4; Don Douthwright, (604) 746-6518



**GRSCR**, 9 Gauthier, St-de-l'Agichan, Quebec J0K 3H0; (514) 588-4254



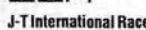
**Honda House Motor Speedway**, 384 Richmond St., Chatham, Ontario N7M 1P9; John Elliot, (519) 354-5530



**Interior R/C Racers (IRCR)**, 311-1780 Springview Pl., Kamloops, B.C. V2E 1J4; Martin Vannieuwenhuizen, (604) 374-1268



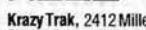
**IROC Off-Road**, Hartland Rd., Victoria, B.C., Gary Allen, (604) 478-8004



**J-T International Raceway**, 127 Milligan Lane, Napanee, Ontario K7R 8A1; N. O'Neill, (613) 354-0099



**Kiwanis Radio Control Club**, 410 Spruce St., Timmins, Ontario P4N 4S7; Al Bouley, (705) 267-1569; fax, (705) 268-9129



**Krazy Trak**, 2412 Miller Ave., Saskatoon, Sask.; Brian & Bart Kendel, (306) 221-7344



**Mackay Raceway**, 1061 W. 14th St. (Mackay Park), North Vancouver, B.C., "R/C Steve" Mulhill, (604) 984-0987



**Maple Grove R/C Track**, RR #3, Brockville, Ontario K6V 5T3; Ray Giroux, (613) 342-5549



**MORRAC Raceway**, 6449 Crowchild Tr. SW, Box 36060, Calgary, Alberta T3E 7C8; Gary Fliegel, (403) 254-1386



**Quintrax Speedway**, Box 1034, Belleville, Ontario K8N 5B6; (613) 962-1414; fax: (613) 962-7306



**Radical Raceway**, 150 Bradwick Drive, Unit 25, Concord, Ontario L4K 1K8; Roland Glass, (416) 660-5238



**Roussillon Hobby Track**, 177-D St-Jean Baptiste, Chateauguay, Quebec J6K 3B4; (514) 698-2151



**Seaway Valley R/C Raceway**, RR 1, Iroquois, Ontario KOE 1K0; Orrville or Carol Smyth, (613) 652-4953



**Thunder Alley**, 1380 London Rd., Sarnia, Ontario N7S 1P8; Rob Smith, (519) 882-3361



**Top Qualifier Race Club**, McKay Park, North Vancouver, B.C.; Derrick Vandekraats, (604) 985-3948



**Union Creek Speedway**, 281 Henderson Highway, Winnipeg, Manitoba R2L 1M4; MRCAR c/o Kelvin Community Centre, (204) 667-9186



**Universal R/C Speedway**, Niagara St., Welland, Ontario; (416) 735-5051



**West Coast R/C Raceway**, 190-7771 Alderbridge Way, Vancouver, B.C. V5C 3A3; Michael Ma or Kelly Ho, (604) 276-8779



**WORC**, 861 Isack Dr., Windsor, Ontario N8S 3W6; Pete Adams, (519) 944-8519 or 974-3346



## FRANCE

**Auto Electron**, 35, rue B. de Ventadour, Limoges, France 87000; M. Boudoul, 55 062763



## HONDURAS

**Autodromo Accion**, Quinta Santa Maria, San Pedro Sula, Honduras, Colonia Rivera Hernandez; Eduardo Hondal, (504) 52-2061



## INDONESIA

**Beverly's Racing**, Palm St., 188, Surabaya, Jatim, Indonesia; Jhon Mudik, 011-62-31-595-888



## ISRAEL

**Nahshoneat**, Abba Niel Silver Str. 64, Haifa, Israel 32809; Golan Levy, (972) 039386444 or (972) 04231252



## JAPAN

**Courtney Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674



**Foster R/C Raceway**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; Camp Foster Arts & Crafts, 011-81-61173-53674



**Hansen Off-Road**, Camp S.D. Butler, Okinawa, Japan, FPO AP 96379; USMC Arts & Crafts, 011-81-61173-53674



**Iwakuni R/C Track**, PSC 561, Box 978, FPO AP 96310-0978; David T. Eck, 011-81-6117-53-3662



**Misawa R/C Raceway**, 13th Fighter Squadron, PSC 76, Box 2585, APO AP 96139-2585; 011-81-176-53-5181, ext. 226-6506



**Yokota R/C Racers**, Yokota Air Base, Tokyo Fussa-Shi, Japan 96326; June Uchiyama, 0425-54-6942



**Zama Off-Road Raceway**, 17th ASGM Unit 45013, Box 3232, APO AP 96338 Japan; SFC Ken Campbell, 011-81-3117-63-8478



## MEXICO

**Alices Off Road**, Lopez Mateos y Rayod S/N, Ensenada, Baja California, BC 22830; Jorge Bustamante, (667) 6-1476, 61477, 86729



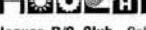
**Baja Jr.**, Lopez Maeos Y Poseidon, Los Mochis Sinaloa; Gabriela Macias Memo Asemcio, (661) 2-0276



**Hobby Centro**, 12 De Diciembre No. 3070-A, Guadalajara, Jal. 45550; Alejandro Ortiz Del Toro, (36) 21-46-28



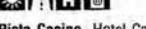
**Hobby's Formula**, Au observatorio 457 DF 01120; (905) 502-3620



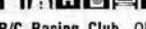
**Jaguar R/C Club**, Calz. Zavaleta 116, Puebla 72150; Chema, Denise or Chiro, (22) 31-00-91, (22) 33-00-94



**La Hielera**, Prol Corregidora Nte 350, Queretaro, QRO C.P. 76160, Jorge Morelos Rabell, (42) 12-15-25



**Pista Casino**, Hotel Casino de la Selva, Cuernavaca, Morelos 16507; Luis Duhart, (73) 19-12-38



**R/C Racing Club**, Obsidiana #2900, Zapopan, Jalisco 44560; Fernando Hernandez, (3) 616-73-47



**NEW ZEALAND**

**Counties R/C Raceway**, Pukekohe Showgrounds, Station Rd., Pukekohe, New Zealand; R. Northcott, 09 23 86904



**SPAIN**

**Outlaw-Ultima II**, Puerto Rico 27, Madrid, Spain 28016; Juan Vacas, (34) 915197298



**ROARCR**, Naval Station, Rota, Spain (P.O. Box 53, FPO NY, NY 09540-0013); PO Kelly Sexton, 011-34-56-822652



**SWITZERLAND**

**JMRCV-Terraindu Levant**, Chemin ou Levant, 1290 Versoix, Geneva, Switzerland; fax, 19 41 22 7790805



## VENEZUELA

**Las Fuentes R/C Club**, 2da Calle las Fuentes El Paraiso, Caracas, DF 1020; Franco Agrusa, (02) 461-72 55



## WEST INDIES

**Island Raceway**, 8 Mile Post Jacks Hill, St. Andrew, Jamaica, West Indies; Rodney Littau, (809) 926-7034 or 927-1198



## ZIMBABWE

**Mosi-Oa-Tunya**, H9619 Highland Harare, Harare Country, Maslaland, Zimbabwe; 46237



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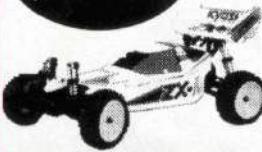
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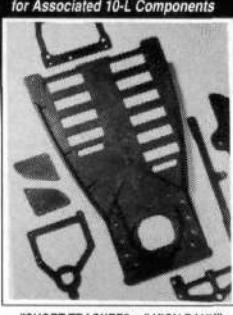
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## NITRO BUYERS' GUIDE (Continued from page 78)

### MANUFACTURERS' INDEX

**A-Main Racing**, 3731 W. 95th St., Overland Park, KS 66204.

**Arrows**; distributed by Racer's Choice.

**Associated Electrics**, 3585 Cadillac Ave., Costa Mesa, CA 92626.

**BMT**; distributed by Racer's Choice.

**Boca Bearing Co.**, 7040 W. Palmetto Park Rd., Ste. 2304, Boca Raton, FL 33433.

**Brat**; distributed by Racer's Choice.

**Dahm's Racing Bodies**, P.O. Box 360, Cotati, CA 94931.

**DuraTrax**; distributed by Great Planes.

**Dynamite**; distributed by Horizon Hobby.

**Global Hobby Distributors**, 10725 Ellis Ave., Fountain Valley, CA 92728.

**Horizon Hobby Distributors**, 4105 Fieldstone Rd., Champaign, IL 61211.

**K&N Engineering**; distributed by Racer's Choice.

**Kyosho**; distributed by Great Planes.

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**Moody Automotive**, 755 Ash St., Flossmoor, IL 60422.

**Mugen**, 7021 Veterans Ave., Brooklyn, NY 11234.

**Nova Rossi**; distributed by Racer's Choice.

**OFNA Racing**, 18 Technology, Ste. 189, Irvine, CA 92718.

**O.S. Engines**; distributed by Great Planes.

**Paris Racing**, 4254 Independence St., Chino, CA 91710.

**Pro-Line**, P.O. Box 456, Beaumont, CA 92223.

**Racer's Choice**, 6N258 Acacia Ln., Medinah, IL 60157.

**RCM of Miami**, 4715 NW 157 St., Ste. 204, Miami, FL 33014.

**Robert Mfg.**, P.O. Box 1247, St. Charles, IL 60174.

**Royal Products**, 790 W. Tennessee Ave., Denver, CO 80223.

**Schumacher Inc.**, 6302 Benjamin Rd., Ste. 404, Tampa, FL 33634.

**Serpent**; distributed by RCM of Miami.

**Sigma Trading**, P.O. Box 51589, New Berlin, WI 53151.

**Sullivan Products**, P.O. Box 5166, Baltimore, MD 21224.

**Team JR/Ace Hardware Hobbies**, 1863 E. Camino Real, Burlingame, CA 94010.

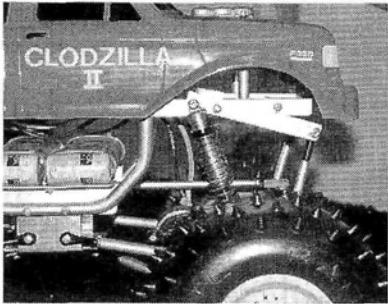
**Thorp Mfg. Inc.**, 4054 E. Mission Blvd., Pomona, CA 91766.

**Thunder Tiger**; distributed by Global Hobby.

**Traxxas Corp.**, 12150 Shiloh Rd. #120, Dallas, TX 75228.

**Webra**; distributed by Horizon Hobby.

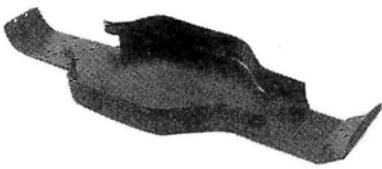
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## ESP MANUFACTURING Clodzillalever Floating Shock System

Designed to be used exclusively with ESP's popular ladder-frame chassis and multi-link suspension, the Clodzillalever kit has a full-floating shock design in which the shock absorber is compressed from both ends. This creates a true rising-rate action so that the suspension is soft on initial compression to handle the smaller bumps, and then becomes progressively stiffer to handle the landings from jumps. The system also significantly lowers the truck's ride height for a lower center of gravity, and this improves overall handling.

ESP Mfg., 20 Crystal Lake Plaza, Crystal Lake, IL 60014; (815) 455-5440.



## BUFFALO COMPOSITE DESIGNS Tub Chassis

This stiff, carbon-fiber chassis is 50 percent lighter than an aluminum tub, and this improves the power-to-weight ratio. Tubs are available for the Associated RC10, RC10 Team Car and RC10T, the Kyosho Triumph, the Losi Pro SE and LXT, and the Traxxas TRX-1 and Blue Eagle LS. To improve its stability, the RC10 chassis is  $\frac{1}{2}$  inch longer than the stock chassis.

Price: \$75

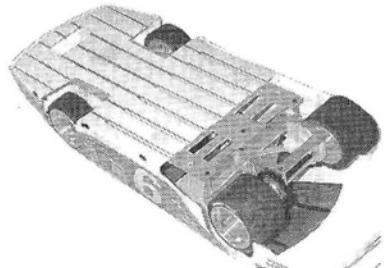
Buffalo Composite Designs, 34 Highland Dr., Lubbock, TX 79366; (806) 829-2506.



## PAASCHE Flow Pencil

The Paasche  $\frac{1}{2}$ -inch Flow Pencil paint applicator is similar to a ruling pen; it handles like a pencil or brush, and it applies paint in a smooth line on any horizontal surface. It's perfect for personalizing items and adding decorative touches that are hard to achieve neatly with a brush. Moving the finger lever back provides an even stripe inside grooves and on smooth or embossed surfaces. It comes with four nibs of different sizes for different width stripes. It doesn't require a compressor, so there is no need to use masking tape.

Paasche Airbrush Company, 7440 West Lawrence Ave., Harwood Heights, IL 60656; (708) 867-9191.



## DAHM'S RACING BODIES Mini Thunderbodies

Dahm's Mini Thunderbodies are aerodynamic "ground effects"-type Lexan underbodies for Dahm's stock-car, dirt-oval and GTP racing bodies. They increase top speed, improve handling, reduce through-the-frame turbulence, increase running times, eliminate front-end chatter and side flutter and protect the bottom of the frame and the body! Mini Thunderbodies are an effective, shorter version of Dahm's original Thunderbodies. They come with decals, mounting instructions and speed secrets.

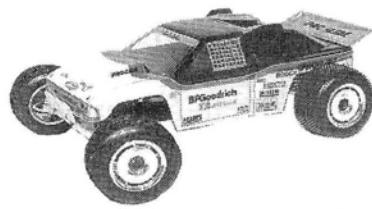
Dahm's Racing Bodies, P.O. Box 360, Cotati, CA 94931; (707) 792-1316.



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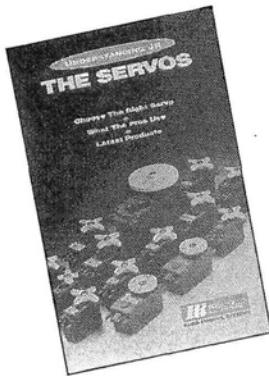
## PRO-LINE Ford Ranger Stadium Truck Body

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### JR REMOTE CONTROL "Understanding JR: The Servos"

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Horizon Hobby Distributors, 4105 Fieldstone Rd., Champaign, IL 61821; (217) 355-0022.



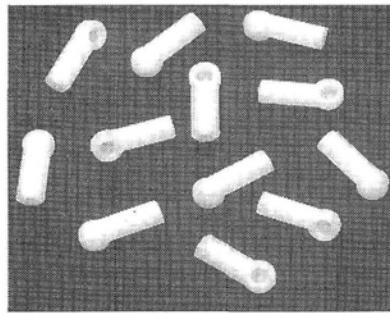
### AERO-CAR TECHNOLOGY Super Speed Gear Lube

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Part no. AC 1001

Price: \$5.99

Aero-Car Technology, P.O. Box 336, Western Springs, IL 60558; (708) 246-9027.



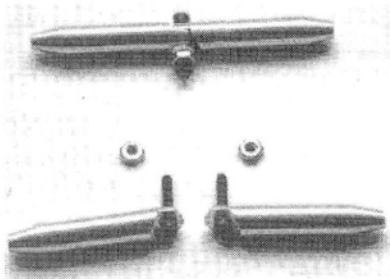
### RPM Heavy-Duty Rod Ends

Injection-molded of durable nylon, these heavy-duty rod ends are designed to fit snugly on Associated or Losi .168-inch-diameter threaded suspension balls. They have a short lead-in where the rod threads in to help you keep the 4-40 rod straight.

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Price: \$4.95/12-piece set.

RPM, 14978 Sierra Bonita Ln., Chino, CA 91710; (714) 393-0366.



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Inside Line, 12859 Route 108, Highland, MD 20777; (301) 854-2701.



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Tamiya America Inc., 101 Columbia, Aiso Viejo, CA 92656.



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Price: \$19.95

Protoform, 4444 Fieldgate Dr., Unit 15, Mississauga, Ontario, Canada L4W 4T6; (416) 646-7638.

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## A D V E R T I S E R I N D E X

A&L Manufacturing.....	.92	Hobby Etc., Inc. ....	141	R.C.C.A. Customer Service .....	54
Ace Hardware.....	.34	Hobby Products International.....	23	R/C International.....	50
Aero Car Technology.....	.49	Hobby Shack.....	119	R/C Motor Sports of Miami.....	113
Airtronics.....	4	Hobby Warehouse.....	134-137	Retailer.....	131
America's Hobby Center.....	25	Inside Line.....	58	Rex/Mugen USA Ltd. ....	57
Associated Electrics.....	52-53,75,84-85,99,128,143,C3	JPS Custom Wheels.....	58	Robinson Racing.....	31
Autographics of California.....	142	JR Designs.....	172	RPM.....	118
B&B Software.....	82	JR Remote Control.....	35	S&K Racing Products.....	93,167
B&T R/C Products.....	86	Kyosho.....	51	Sassy Chassis.....	118
Badd Boyz.....	86	Lavco USA.....	102	Schumacher Inc. ....	55
BME.....	112	Litespeed.....	9	Sheldon's Hobbies.....	114-117
Boca Bearing Co. ....	126	MaxMod Mini Sports.....	182	Sherline Products.....	138
Bolink R/C Cars, Inc. ....	157	Model Craft Mfg. ....	156	Shriner's.....	112
BME.....	112	Model Rectifier Corporation. ....	8,C4	Southside Hobbys.....	140
Bruckner Hobbies.....	110-111	Moody Automotive.....	54	Stormer Hobbies.....	178-181
Bud's Racing Products.....	144	Mugen USA, Ltd. ....	56	Tamiya.....	79
C&M Team Cobra.....	58,96	Nationwide Hobbies.....	145	TD Enterprises.....	156
Canadian Hobbycraft.....	172	Novak Electronics.....	27,62	Team Losi.....	71,103,183
Cats West.....	102	OFNA Racing.....	142	Team Losi Tech Talk.....	102
Cheetah Racing.....	142	Panasonic Ind. Co., Battery Sales Group.....	91	TEKIN.....	43,133
Central Model Marketing.....	144	Paragon Racing Products.....	42	The Finest R/C.....	168-171
Class Recreational Products.....	92	Parma/PSE.....	.88,123,132	Thorp Manufacturing, Inc. ....	66
Competition Electronics Inc. ....	73	PC Hobbies.....	142	Tower Hobbies.....	158-166
Dahn's Racing Bodies.....	41	PJ International.....	126	Traxxas.....	77
Double Strike.....	82	Plano Molding Company.....	54	TRC.....	46,127
DuraTrax.....	C2	Pointe RC Models.....	141	Trinity Products.....	3,18-19,32-33,38,95-95
ERI.....	182	Pro-Line U.S.A. ....	7,146,153	Twister Motors.....	11
ESP.....	182	Raborn Racing Originals.....	156	Ultimate Hobbies.....	141
Futaba Corp. ....	15,22	Race Space.....	186	Victor Engineering.....	87
Gas Car Club International.....	124	Ranch Pit Shop.....	139	Walt's Hobby.....	49
Gas Off-Road Championships.....	65	R.C.C.A. Action Series Subscription.....	59	WCM.....	132
Global Hobby Distributors.....	83	R.C.C.A. Buyer's Mart.....	173-177	World Class Inc. ....	102